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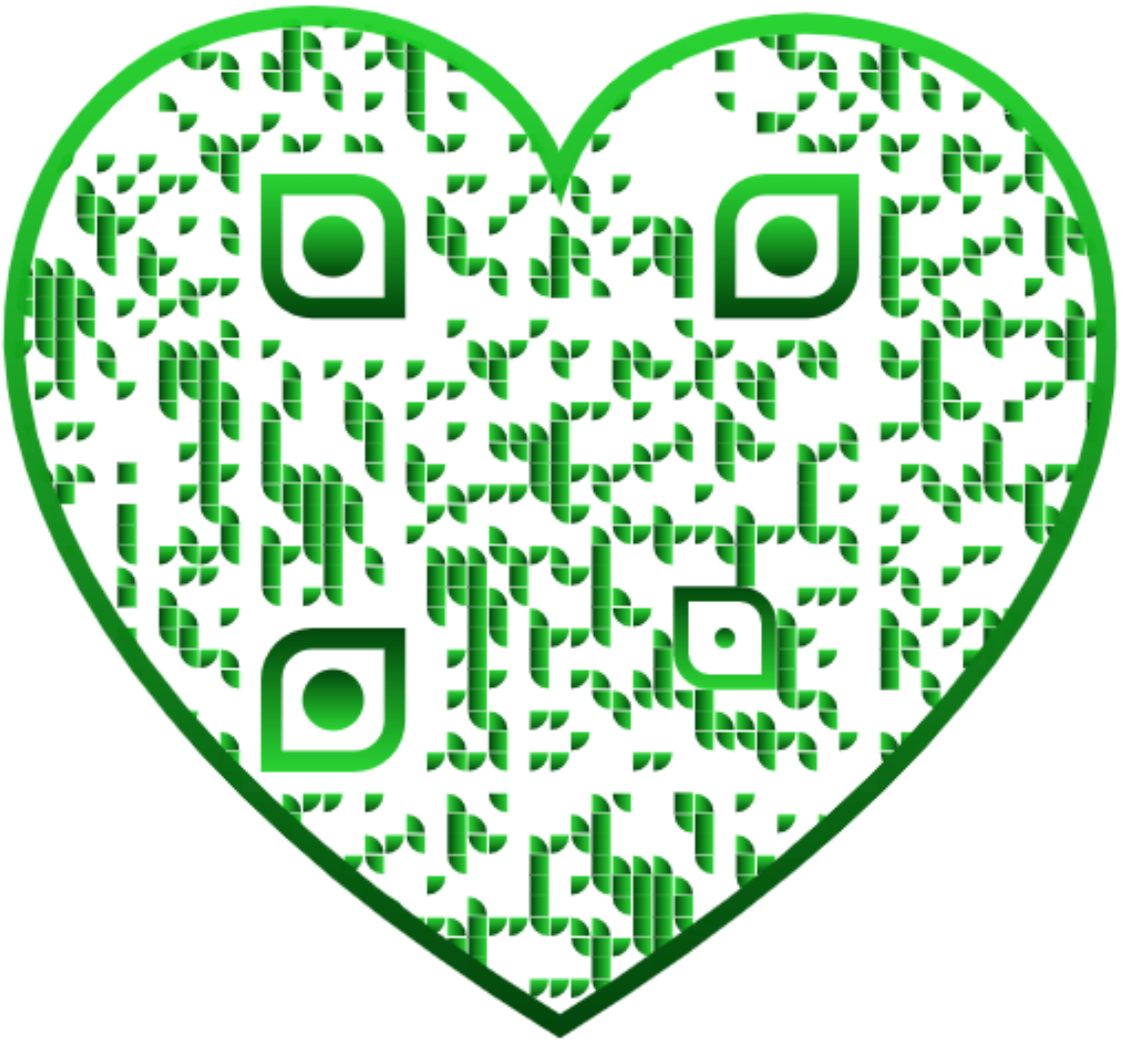

The Stuff that Dreams Are Made of

MAGICO

# AS WE SEE IT

BY JIM AUSTIN

**THIS ISSUE:** Thoughts inspired by conversations and experiences at the world's largest hi-fi show.

## Thoughts after Munich

I'm writing this column on the long flight back to New York City following High End Munich, the big hi-fi show that in regular times takes place each May. Because these are not regular times, this was the first Munich show since 2019. This show was smaller than other recent Munich shows: COVID in the Far East limited involvement by people and companies from East Asia, and German government–mandated attendance caps limited the number of people who could enter at any one time. Even so, it was a big show, with some interesting product introductions and prototypes.[1]

A big hi-fi show is a great place to see and audition new hi-fi equipment. Of at least equal importance to me, it's also a good opportunity to talk about hi-fi with leading people in the field.

Early Thursday afternoon, the first day of the show, I visited an off-site "service apartment" temporarily occupied by folks from Purifi Audio, the company best known for its advanced, low-distortion "Eigentakt" class-D amplification modules. Purifi is also developing loudspeaker drivers, which they were demonstrating in Munich.

Amplifier modules and loudspeaker drivers may seem an odd combination, but both are basic building blocks of a hi-fi system and both are significant sources of distortion. As such, both are obvious foci for people aiming to make hi-fi better.

But haven't people been working to improve speaker drivers and amplifiers for more than 100 years? Surely all the low-hanging fruit has already been harvested—hasn't it? I guess that depends on how tall you are, metaphorically speaking.

Bruno Putzeys, who co-founded Purifi with Peter Lyngdorf and Lars Risbo (the latter also present, as was co-owner/director Claus Neesgaard), told me that when they started Purifi, the main idea was to correct hi-fi problems with DSP—digital signal processing. They soon changed course and started to use science and engineering to attack some of those problems at the source. A result is the Eigentakt module used in some of the best current class-D amplifiers. Another is their loudspeaker drivers, seven of which are already marketed, with others in development. Purifi's drivers are documented by extensive performance data—far more than is provided by most other driver manufacturers.

Many advancements in loudspeaker drivers involve fancy and expensive new materials—anything that makes the cone stiffer and lighter. Purifi's new drivers use old-school cone materials: aluminum and paper. In place of real-world trial and error, Purifi solves many problems *in silico* before they build the first prototype. Then starts a cycle of measuring, listening, and refining—but less iteration is needed now because their simulation work set them closer to the optimal solution. Such an approach led to modifications in the shape of the cones used in Purifi's loudspeaker drivers that *look* subtle but have important sonic consequences.

Less attention has been paid to surrounds, those "floppy pieces of rubber" as one of the Purifi folks—I think it was Putzeys—called them during our meeting. Because they're at the outside edge of the driver's radiating surface, and because area is proportional to the square of the radius, the surround can be close to 20% of a speaker driver's moving surface. You can't ignore that if you want low distortion.

There's nothing special about the material in Purifi's surrounds, either; it's just rubber—but because of the way they're molded, Purifi's surrounds are less floppy than most. I lack the space to detail the technology,[2] and I'd likely get it wrong if I tried—so I'll merely report that while Purifi's cones look ordinary, their computer-optimized surrounds look kind of, well, funny. Not that you'd care a whit after you heard them.

Purifi's work on drivers isn't limited to the parts you see. Innovations in the motor system reduce hysteresis distortion and solve several other important problems.

But it's not their specific innovations I want to draw attention to. It is, rather, some big ideas that the Purifi approach illustrates:

- Straightforward, clever thinking combined with simulation can still, in 2022, realize major gains in performance even in hi-fi's most basic technologies.
- Easily audible improvement can result from lowering distortion that's already at levels far lower than you (or anyway I) would imagine audible, often lying far below the signal level and deep in the noise. In certain circumstances, lowering distortion from –80dB to –100dB (relative to the signal level) can deliver audible gains. And this ain't some artsy-poetic intuitive tube-amp manufacturer; it's Purifi, home of serious engineering and class-D modules that solve that technology's problems by flooding them with feedback.
- Speaker drivers that sound (and measure) fine with single tones—like, say, a frequency sweep—can run into serious trouble with more complex signals. Like, say, music. *Intermodulation*, via various mechanisms, is where things get interesting.[3] What happens in the bass can have profound effects on the midrange. But these problems can be solved, and some of them already have been.

Purifi's people are serious engineers, but don't make the mistake of thinking they mindlessly ally themselves with the simple-minded objectivists who populate certain online discussion forums. They understand that science and engineering must be carefully deployed. Members of the Purifi team seemed to me as impatient with measurements-happy reductionists as with the radical antimeasurements crowd. Sure, it's depressing when a forum post asks, "Is it possible for a component that measures well to sound good?" But owning an Audio Precision analyzer doesn't make you an expert, and the unguided application of analytical tools can lead you far astray.

Knowing *what* to measure is critical, and getting to that point is hard work. As is written in a Purifi blog post—it's unsigned, but the voice and some biographical details sound like Putzeys's—"We don't so much hear distortion levels as distortion mechanisms. You need to understand the mechanism before you can design a test that will quantify it sensibly." ■

1 See stereophile.com/category/munich-2022.

2 If you're interested, check out patents.google.com/patent/WO2020208070A1.

3 See, for example, this Purifi blog entry: purifi-audio.com/2019/12/12/imd/. If you're a tech-minded audiophile, I encourage you to monitor the Purifi blog, at purifi-audio.com/blog/. New posts aren't frequent, but they're meaty.

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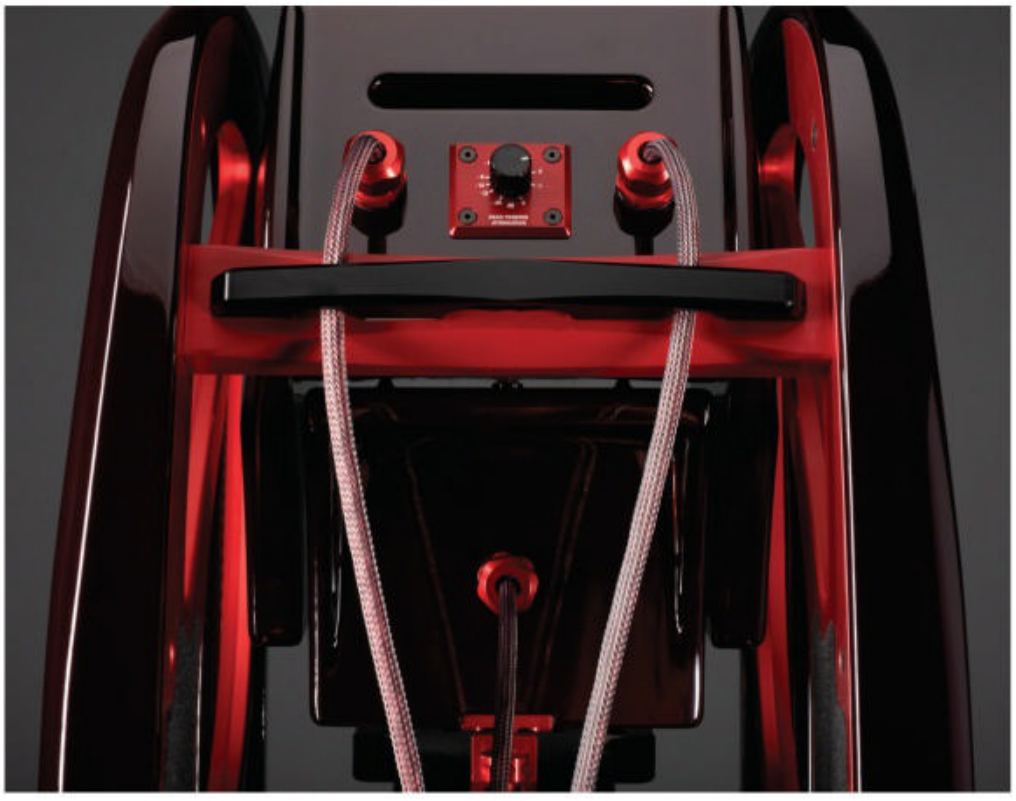

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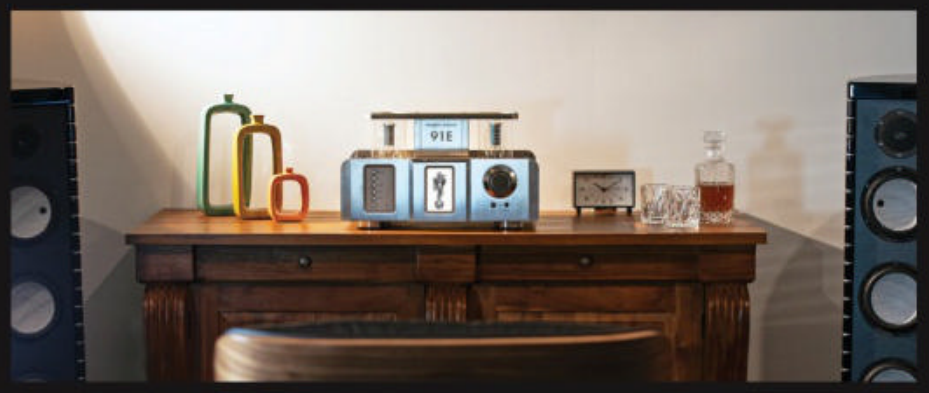


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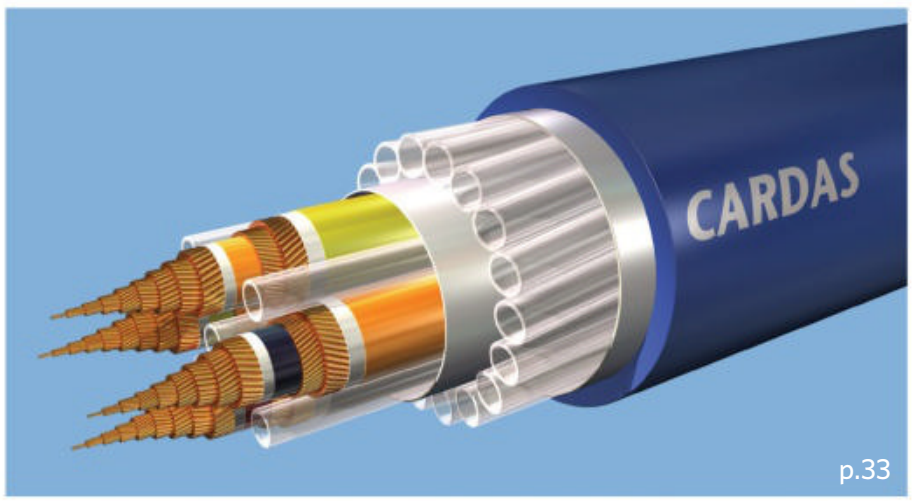

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EDITOR **JIM AUSTIN**
**JIM.AUSTIN@STEREOPHILE.COM**

TECHNICAL EDITOR **JOHN ATKINSON**
SENIOR CONTRIBUTING EDITORS
**MICHAEL FREMER, HERB REICHERT, KALMAN RUBINSON, JASON VICTOR SERINUS**
WEB PRODUCER **JON IVERSON**
COPY EDITOR **LINDA FELACO**

FOUNDER **J. GORDON HOLT**

COVER PHOTO **DAVID DUPUY**

ART DIRECTOR **JEREMY MOYLER**

CONTRIBUTING EDITORS (AUDIO)
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ADVERTISING
GENERAL MANAGER **KEITH PRAY**
**KPRAY@AVTECHMEDIAUSA.COM**
ADVERTISING MANAGER **ED DIBENEDETTO (212) 915-4153, EDIBENEDETTO@AVTECHMEDIAUSA.COM**
SALES COORDINATOR **ROSEMARIE TORCIVIA (212) 915-4160, RTORCIVIA@AVTECHMEDIAUSA.COM**
DIGITAL INQUIRIES **KEITH PRAY, KPRAY@AVTECHMEDIAUSA.COM**

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AVTECH MEDIA AMERICAS INC
EDITORIAL DIRECTOR **PAUL MILLER**
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IMPORTANT STEREOPHILE CONTACT INFORMATION

SUBSCRIPTION INQUIRIES
USA & CANADA (800) 666-3746,
stereophile@emailcustomerservice.com
Stereophile, Box 420235, Palm Coast, FL 32142-0235
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# LETTERS FEEDBACK TO THE EDITOR

**TAKE HEED!** Unless marked otherwise, all letters to the magazine and its writers are assumed to be for possible publication. Please include your name and physical address. We reserve the right to edit for length and content.

### Letter from a Herbivore

I think the publisher should consider changing the name of the magazine from *Stereophile* to *Herbophile*.

*Tim Grindell,*
*Hastings, Hawkes Bay, New Zealand*

### Vinyl vs digital

There is much confusion in the industry about what vinyl is and what it isn't. I see much being said about "vinyl vs digital," as if vinyl was a synonym for analog. Analog music represents the actual, continuous sound waves generated by the artists and their equipment. Most of the vinyl being produced today is from digitally mastered music. Does vinyl somehow transform this digitally sampled music into continuous sound waves? Of course not. Vinyl is the preferred delivery technology for analog music and, more recently, a complement to digital music. It is *not* a synonym for analog.

*Jeff Weiner,*
*Scottsdale, Arizona*

*Mr. Weiner, it's an important distinction, for sure: Digital (and analog) is a means of representing information, whereas, in the context of reproduced music, vinyl (like "CD") is a storage medium.*

*Forgive me if this is obvious, but it needs to be made clear: Sound is* always *analog, a continuous pressure wave. If the sound came from a recording, then before it was a pressure wave it was a continuous, time-varying voltage—also analog. Regardless of how the information is stored, you always end up with a continuous, analog wave, even if it's jagged or stair-stepped like the output of NOS DACs.*

*We'll get letters, but I've come to think of digital (especially hi-rez, regardless of whether it's stored on silicon, polycarbonate, or whatever) as a potentially transparent* container *for music—I can easily be fooled by a well-made high-rez needle drop—while vinyl (not analog) is a wonderfully flawed distribution medium, a physical package with its own, often pleasing sonic signature.***—Jim Austin**

### Jazz trigger warnings?

I consider myself a fan of Bill Evans, so I was excited to read two very positive reviews, in the May 2022 *Stereophile*, of the 2-CD set, *Inner Spirit*, on the Resonance label. I recently received the 2-CD set and had a listen.

The reviewers use the words "boldness," "exuberant," and "strength" to describe Evans's playing. While I would not argue with those descriptors, I would add another: dissonance. While jazz is frequently spiced with

**Listening to Bill Evans with a glass of wine is usually a very mellowing experience.**

a dash of dissonance here and there, I have never heard Bill Evans take that spice to this level. Listening to Bill Evans with a glass of wine is usually a very mellowing experience. After listening to the 2-CD set, I was on edge, jittery, jumping out of my skin, and ready to throw the CDs in the trash. I could not have been *less* mellow.

But isn't this just a matter of taste? To some extent, yes. But if you're sitting in a bar and you punch a button on the jukebox labeled "Peggy Lee" and you get the Sex Pistols, it would be nice to know that upfront.

*Charlie DeJoseph*
*Estes Park, Colorado*

*Mr. DeJoseph, You're not wrong in saying that it's a matter of taste, but that wasn't the Sex Pistols you were hearing: It was Bill Evans. It just wasn't the Bill Evans you're used to. Evans had more to say than he's often given credit for these days. That's one reason* Inner Spirit *is such a revelation.*

*I will be so bold as to suggest—and I mean this with the greatest respect—that instead of dismissing this music as insufficiently mellow, you open your ears and listen for what Evans is saying on* Inner Spirit. *I think you'll find that the music opens up for you after only a few listens. The more we invest in good music, the more we get out of it.***—Jim Austin**

### Recommended Components 2022

A few years ago, my friends and I spotted Art Dudley at the Montreal audio show and wanted to commend him on his *Stereophile* contributions. Perhaps we were gobsmacked at encountering one of the revered writers of the audiophile world, or maybe we just didn't want to disturb him while he was checking his email, but we never approached. That opportunity is no longer possible. Therefore, I wish to thank all the *Stereophile* writers, in particular Herb Reichert and Michael Fremer, for their entertaining, informative, and sometimes humorous columns. Always a good read.

I'd also like to thank *Stereophile* for publishing the Recommended Components list year in, year out. Every audio component I have purchased over the past 30 years can be attributed back to an entry in this listing. There are publications that will give 5 stars to audio components … within their price class. Others compare a handful of similar products and declare a winner. Still others ask us to trust their "golden ears." Only *Stereophile* offers an absolute rating.

It takes some audacity to lump a $53,000 preamplifier in the same class as one costing $949. Yet, this is encouraging for all audiophiles, as it means we can enjoy listening to music with top-notch components within our own economic and social strata. What other hobby can lay claim to this seeming contradiction? As a value-conscious audiophile, I'm always on the lookout for components with exceptionally high performance relative to price, rather than the inverse. Keep up the great work!

*Raymond Soo*
*Ottawa, Ontario, Canada*

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### Jimmy and Wes

As I was going through your April 2022 issue, I encountered the picture on page 165 of something I had forgotten: *Jimmy & Wes: The Dynamic Duo*. I first purchased this record in my college days when it was new. I have since lost the LP, but I purchased a CD reissue more than 20 years ago. I put it on my KEF LS50 Wireless II system and had a listen. Wow! I was blown away, especially by those powerful Jimmy Smith Hammond solos. My only complaint about the recording is the wide stereo separation on the accompanying instruments, especially Grady Tate's drums only on the right channel. If I move the balance all the way to the left speaker, the drums virtually disappear. Other than that, it was a sublime experience, taking me back more than 50 years when I was a smart-aleck college kid.

*Ed Gianni*
*Niagara Falls, New York*

*Mr. Gianni, if you like that one, you should check out* Further Adventures of Jimmy and Wes, *which was drawn from the same sessions. I wouldn't say it's better, but it's almost as good.***—Jim Austin**

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# INDUSTRY UPDATE

## AUDIO NEWS & VIEWS

**SUBMISSIONS:** Those promoting audio-related seminars, shows, and meetings should email the when, where, and who to stletters@stereophile.com at least eight weeks before the month of the event. The deadline for the November 2022 issue is August 20, 2022.

## US: LOS ANGELES, CALIFORNIA

*Jason Victor Serinus*

The Los Angeles and Orange County Audio Society (LAOCAS) has chosen John Atkinson, former editor-in-chief and now technical editor of *Stereophile*, as the winner of its 29th annual Founder's Award. The award comes 57 years after JA1 began making recordings on his first tape recorder and 46 years after he began working at a hi-fi magazine, as an editorial assistant at British magazine *Hi-Fi News & Record Review*.

John's career has been illustrious and varied. Due to his self-described "schizophrenic nature," he was passionately drawn to music but excelled in science. John said goodbye to formal instrumental study and went the science route, earning a B.Sc. in physics and chemistry from the University of London and postgrad certification as a high school science teacher. He then began working in a government research lab, where he made his own transistors.

Around the same time, he began performing in bands. One gig was as a member of the short-lived British folk-rock band Back Alley Choir, on whose sole, eponymous album, released in 1972, he played bass and sang. Another band, led by Matthew Ellis, recorded at Abbey Road Studios, inspiring John to abandon his scientific career. When the band manager ran off with the recording's advance and record-release plans vaporized, JA was out of a job.

After that, John spent four years touring with "teen singing sensation" Helen Shapiro while doing other gigs. "The album I was most proud of was *Obie Clayton*," by the three-person Obie Clayton band, engineered by Jerry Boys of later Buena Vista Social Club fame, released in 1975 on DJM Records. The album was a "Porky's Prime Cut"; you can listen to a track, "Blues for Beginners," on *Stereophile*'s website.[1]

In September 1976, JA1 became an editorial assistant at British magazine *Hi-Fi News & Record Review*. "I continued with my career as a musician for 18 months after joining *Hi-Fi News*," John said. "It was the summer of '78, when I was playing matinees and weekend evenings in a vaudeville show, that I decided to stop. I was sitting in the music pit, looking down at the music and looking up at the stage, when it hit me that you learn about music and improve your playing when you play with musicians who are better than you, [who] drag you up closer to their level." That wasn't happening, so he decided to move on. In 1982, John became *Hi-Fi News*'s editor-in-chief. By the end of 1985, he had almost doubled the magazine's circulation. Larry Archibald, *Stereophile*'s owner and publisher, snatched him away to succeed founder J. Gordon Holt, this magazine's founder, as editor.

Under John's leadership, *Stereophile*'s circulation increased from around 20,000 to a peak of 92,000. In April 2019—390 issues after his appointment—he became the magazine's technical editor, handing over editor-in-chief duties to Jim Austin, dubbed JA2.

John has measured more than 900 loudspeakers, 600 amplification components, and 400 digital products with a standardized test regime that has become an industry benchmark. A longstanding member of the Audio Engineering Society, in 2011, John accepted an invitation from the Technical Council of the AES to present the prestigious Richard C. Heyser Memorial Lecture at its 131st Convention in New York. He is also an accomplished recording engineer; he has produced, engineered, mastered, or played on more than 40 commercial recordings. His part in engineering and mastering the Portland State Chamber Choir's *Translations* (Naxos) helped make the album a *Gramophone* magazine Critic's

1 See stereophile.com/content/john-atkinson-receive-laocas-founders-award.

PHOTO: JASON VICTOR SERINUS

## CALENDAR OF INDUSTRY EVENTS

**ATTENTION ALL AUDIO SOCIETIES:** We have a page on the *Stereophile* website devoted to you: stereophile.com/audiophile-societies. If you'd like to have your audio-society information posted on the site, email Chris Vogel at vgl@cfl.rr.com. (Please note the new email address.)

Please note that it is inappropriate for a retailer to promote a new product line in "Calendar" unless it is associated with a seminar or similar event.

### CALIFORNIA: TORRANCE

■ Sunday, August 21, 2–5pm: The Los Angeles and Orange County Audio Society will hold its monthly meeting at The Source Audio Video Design Group in Torrance (3035 Kashiwa St.). Well-known loudspeaker designer and Society member Andrew Jones will present the meeting's seminar, covering his professional experience with several manufacturers to help people learn what to look for—and listen for—when purchasing speakers. Systems from Bowers & Wilkins, Sonus faber, and Focal will be demo'd; a brand ambassador from each will be on hand. Selected CDs/SACDs will be raffled off and lunch will be served. Free parking is nearby. Guests, visitors, and new members are invited. For more information, visit laocas.com or call LAOCAS President Allen Taylor at (714) 299-1509.

### NEW YORK: NEW YORK

■ Saturday–Sunday, September 10–11: Presented by the Chester Group, the New York Audio Show will take place on rescheduled dates at the AMA Conference Center at 48th and Broadway in Midtown Manhattan (1601 Broadway, 6th Fl., New York, NY 10019). For more information, visit the NYAS Facebook page: facebook.com/NewYorkAudioShow/ or their website: chestergroup.org/newyorkaudioshow/2022.

### WASHINGTON: SEATTLE

■ Friday–Sunday, July 29–31: Following COVID-related postponements and date changes, the inaugural Pacific Audio Fest will take place at the Doubletree Hilton Sea-Tac (18740 International Blvd., Seattle, WA 98118). The show will feature live music, a record fair, and head-fi gear in addition to large listening rooms, according to their website. For more information and bookings, visit pacificaudiofest.com.

Choice in 2020.

John's trophy, which is produced by the same company that casts the Oscar, will be awarded at LAOCAS's 29th Annual Gala in Los Angeles on December 4, 2022. "It will be presented to me by Michael Fremer," John said. "Since he's so good at impersonation, he'll probably sound more like me than I do."

## US: BROOKLYN, NEW YORK

*Jonathan Scull*

### VLADIMIR LAMM: IN MEMORIAM

By what shall you know a man? By his works? His drive? His strength? Or his kindness, sensitivity, and understanding? A soulful, loving heart? All of these, I'd say, and more.

Vladimir Lamm was all those things, and I admired him for his passion and devotion to his work. He died on April 18 this year, at 76, surrounded by his wife Irina and daughter Esther. The two women will be continuing Lamm Industries from new digs in Florida.

I'd been out to see Vlad and Elina in Brooklyn early on, his factory down a flight of stairs. He and Elina were wonderful hosts. I wasn't surprised to hear Vladimir was an actual rocket scientist back home.

Vladimir taught me things: that the full body is capable of resonating to music, not just your ears. About avoiding negative feedback and what that did to sound. Lamm laid out his designs by hand at a large drafting table; an émigré from Ukraine, he didn't trust the internet.

I remained impressed when I read about John Atkinson's visit with Vladimir regarding measurement of his M2.1 amplifier. JA wrote, "Vladimir was casually clipping one of the amps on his test bench with a 1kHz tone into 8 ohms and leaving it running while we talked about the design. When I expressed some concern—I always leave the clipping tests to the end of my measurement program because that's when amplifiers break—Vladimir reached over and momentarily shorted the M2.1's output to ground. There was an impressive blue spark, but the amplifier safely turned itself off. Its red front-panel LED flashed away for 14 seconds, after which it turned back on and continued to drive full power into the load.

"The M2.1 may be an expensive amplifier, but, in addition to fine sound quality, you also get a bombproof design that should deliver that sound for many years. … The Lamm M2.1's measurements reveal no significant weaknesses and imply a well-engineered design. It also appeared very rugged."[2] That passage says so much about Vladimir Lamm and the products he made.

I think Vladimir would appreciate an obituary that talks about his designs, his ideas, and especially the sound of his products. There was no separating Vladimir from the sound: He lived for gourmet performance and knew how to get there.

We all search for that lunatic moment when, sitting in the dark and listening to our favorite music, we find ourselves in a proto-cathartic state: totally involved, the music filling mind and (as Vladimir would have it) body. For me, this happened almost at will with Lamm products: The soundstage would swirl about me, and I found it easy to lean right in to the essence of the music. I was, I felt, leaning into the essence of Vladimir Lamm. I'll miss him.[3]

## US: BOULDER, COLORADO

*Paul McGowan*

### BASCOM H. KING: IN MEMORIAM

The problem with life is that we must deal with losing those we love.

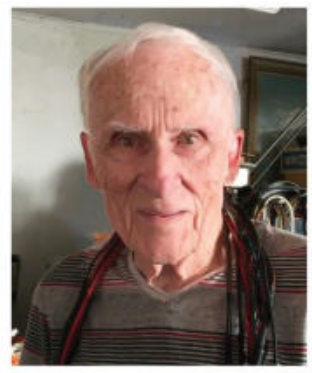
It is with a heavy heart and great sadness that I report the passing of one of the great audio pioneers and innovators, Bascom H. King. In addition to creating PS Audio's flagship BHK Signature series and other electronics, he did work for many audio companies including Constellation Audio, Marantz, and Infinity Systems.

Bascom passed away on May 4, 2022, from complications of pneumonia. He was 84.

To say Bascom was one of a kind is an understatement. He was a treasure.

I first met Bascom in the late 1980s when my dear friend and former partner in crime—the late Arnie Nudell, then CEO of Infinity—called me at the 11th hour with a set of impossible demands. At the time, my company, PS Audio, manufactured all of Infinity's electronic crossovers for their big and expensive speaker systems. As a contract vendor, we were expected to deliver whatever they ordered, on time.

I had been informed that Infinity would be keeping their company doors open until midnight to receive the 100 crossovers they had ordered from us less than a month before. Arnie was calling to let me know that on top of having to meet that impossible deadline, he would be sending "an engineer" down to inspect the goods.



For all I knew, Bascom H. King was just a hired gun Infinity sent over. His perfectionist demands about certain tiny details were getting in the way of our delivering those crossovers by midnight. I figured the easiest way to distract Bascom was to spout off some engineering bullshit, mixed with CEO pomp and power. Boy, was that a mistake. Bascom, whom we referred to in later years as Dr. King, corrected my smoke-and-mirrors babble. He gathered our small group of techs, engineers, and me for an hour-long lecture on how active servo mechanisms work when used with loudspeaker woofers. The clock was ticking, and I had a four-hour drive ahead of me to deliver those crossovers before midnight.

After his lecture, Bascom did something I'll never forget: He rolled up his sleeves and personally manned the tech bench, to test and approve all 100 crossovers with lightning speed. If something was not quite right, he fixed it, right there on the spot. He made certain they were approved, wrapped, packaged, and in my station wagon by 8pm.

During his time at PS Audio, when he wasn't diddling with the knobs on our test equipment or telling us why everything we were doing was wrong, he was playing his guitar as if he hadn't a care in the world.

Bascom was unique. He knew more about analog electronics and audio gear than any engineer I have met in the 50 years I've been in this business.

I am very sorry to report such sad news. He will be missed.

## INDIANA: INDIANAPOLIS

*Julie Mullins*

If you've seen the widespread reports about the demise of Onkyo, the long-time hi-fi brand, don't fret: The Onkyo story isn't over. Premium Audio Company (PAC) recently issued a press release noting

2 See stereophile.com/content/lamm-industries-m21-monoblock-power-amplifier-measurements.

3 See stereophile.com/content/lamm-industries-m11-monoblock-power-amplifier-page-2.

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"misleading media reports" about Onkyo's bankruptcy filing.

In the October 2021 issue, we reported that the VOXX-owned subsidiary Premium Audio Company, including partner-investor Sharp, had acquired Onkyo Home Entertainment Corporation's key assets: its brands (Onkyo and Integra), intellectual property, engineering, and manufacturing rights. Sharp was set to manufacture those Onkyo components, in Malaysia. The $30.8 million purchase also included "the assumption of certain liabilities and future payment of commissions to Onkyo on certain product sales," the VOXX press release said. That deal was completed in Q3 of fiscal 2022, according to financial information reported by VOXX.[4]

On May 13, 2022, Japan's Onkyo Home Entertainment, whose assets had already been sold off, filed for bankruptcy protection in Osaka, Japan. Obviously, though, "This filing did not include the assets that were previously purchased by PAC and Sharp," as VOXX/PAC wrote in the press release. Premium Audio Company's 11 Trading Company (11TC) subsidiary continues to sell Onkyo products, and apparently sales are brisk: Sales of Onkyo-branded products—plus licensed Pioneer products—"grew from $13.7 million in revenue in Fiscal 2021 to $59.4 million in Fiscal 2022, with Onkyo branded products #1 by volume," the release said. A quick online search turned up Onkyo components for sale on the Onkyo USA site and elsewhere. The Onkyo brand lives on.

4 See tinyurl.com/yev78vxa.

## GERMANY: MUNICH

Stereophile *Staff*

In mid-May, two *Stereophile* contributing editors, Julie Mullins (JMu) and Jason Victor Serinus (JVS),[5] attended High End Munich, the world's largest audio show, and reported on a few products first seen by the public at the Munich show. A small number of these were still prototypes. A random, incomplete sampling of new products follows. You can read more of our Munich coverage at stereophile.com/category/munich-2022.

### D'AGOSTINO RELENTLESS EPIC AND EPIC 800 MONO AMPLIFIERS

Demo'd with Wilson Audio's Chronosonic XVX in one of its four new "Season" colors were two new luxury-class monoblocks from D'Agostino: the Relentless Epic ($349,000/pair) and Epic 800 ($194,500/pair). The former upgrades the original Relentless, which appeared four years ago. The latter combines new circuit sections and components into a smaller-than-Relentless Epic chassis.

In a press release, D'Agostino wrote that "The Relentless Epic 800 amps employ an all-new, fully complementary topology based around a precision input stage that maintains an essentially perfect balance between the positive and negative components of the signal. Any distortion artifacts that appear on one half of the signal will also appear on the other half and thus cancel each other. Gain circuits operate in the current domain, assuring the amplifiers' performance does not fluctuate regardless of the speaker demand. … New input stage devices deliver a 300% increase in current as compared to the previous devices."

D'Agostino claims that the new Relentless offers extended low- and high-frequency performance, reduced distortion at both frequency extremes, and an open-loop linearity approach that obviates the need for global negative feedback. A nearly 50% increase in operating bias translates into more class-A sound and consistent temperatures that avoid temperature extremes.

Existing Relentless amplifiers can be upgraded to Epic status for $49,500/pair. The Relentless Epic 800 will begin shipping in Q4 in standard silver or black finish. The new Epic 800 will be available with an optional, Roon-certified DAC module.–JVS

### ORTOFON MC DIAMOND PHONO CARTRIDGE

I had the pleasure of meeting Ortofon's COAR (chief officer of acoustics and research), Leif Johannsen, in the Ortofon room at the MOC. He told me with delight about his new top-of-the-line transducer, the Ortofon MC Diamond cartridge (€9000, estimated at about $10,000 US MSRP), due out in August. The new cartridge is an upgrade over the MC Anna Diamond cartridge; it drops the name of the now-controversial Netrebko and uses a nonmagnetic armature and a diamond cantilever.

Johannsen told me that the equipment in the room's system is the same setup he uses for his engineering and testing at Ortofon in Denmark: a TechDAS Air Force V Premium turntable, Einstein phono preamp, and Mark Levinson amplification (including a Levinson No 523 preamplifier with

5 Editor Jim Austin also attended.

class-A phono stage and a Levinson No 534 stereo amplifier) driving the Audiovector R 11 Arreté loudspeakers. Japanese-made Ortofon cabling was deployed throughout the system, Johannsen said.–**JMu**

### ESOTERIC GRANDIOSO T1 TURNTABLE, M1X MONOBLOCK POWER AMPLIFIER, AND S-05 STEREO AMPLIFIER

In celebration of Esoteric's 35th anniversary, the company's Shota Terai offered a sneak preview of the Grandioso T1, the first turntable in Esoteric's long history. Due to be finalized soon, the T1 employs the company's "patent-registered unique contact-free Esoteric MagneDrive System that inductively synchronizes the rotations of a magnetic driver and platter, realizing a quiet and silky-smooth rotation at an extraordinarily accurate rotation speed."

The just-released Grandioso M1X monoblock power amplifier claims an "all-new drive stage that has been expanded in size by 150%" and "astonishing power linearity from 300W/8ohms to 2400W/1ohm." The company's "largest-ever" power supply occupies 60% of the internal space and includes a 3000VA power transformer that weighs 19kg. The total weight is approximately 62kg (136.75lb).

Still under development is the S-05 class-A stereo power amplifier, which features dual-mono construction and a rated output of 30Wpc into 8 ohms, 60Wpc into 4 ohms. Biamping can double the output.–**JVS**

### DYNAUDIO FOCUS WIRELESS LOUDSPEAKERS

Danish audio company Dynaudio launched a new trio of Focus wireless speakers in Munich. Dynaudio Technical Trainer Otto Jorgensen gave a presentation on the new Focus series: the 3-way Focus 50 floorstander ($11,000/pair), the 2.5-way Focus 30 floorstander ($8250/pair), and the 2-way Focus 10 standmount ($5500/pair). This series supersedes the previous Focus XD speaker line.

The new Focus speakers all contain class-D amplification codeveloped with Pascal in Copenhagen and originating in Dynaudio's Core studio system. The modules output 110W to the doped soft-dome Cerotar tweeters and 280W to each woofer; the woofers have MSP diaphragms in aluminum baskets. The speakers' sealed MDF enclosures use DSP to control bass. They come in four finishes: black or white (both high-gloss), walnut wood, or blonde wood.

These Focus speakers serve as nearly complete systems, lacking only a source, which can be digital or analog. Digital inputs include S/PDIF coaxial, optical (TosLink), and Ethernet; an RCA analog

input pair with sensitivity that's user-selectable via the control app; and a subwoofer output. The speakers support streaming services including Qobuz, Tidal, and Spotify Connect. Control is via an included Bluetooth remote or the app.

The Focus speakers can work with Dirac Live for room correction. (A Dirac subscription is required.) The "primary" speaker controls the "client" speaker via a WiSA-certified connection that enables up to 24-bit/96kHz transmission; this wireless connection operates between 5.2 and 5.8GHz to eliminate Wi-Fi interference, according to the presentation. Even the grilles are smart: They "sense" when you attach them and automatically adapt EQ to compensate for the material's presence in front of the drivers.

The new speakers are available now in selected stores in Europe. They're due to hit the US market later this year. Look for a *Stereophile* review.–**JMu**

### MOBILE FIDELITY ELECTRONICS NEW MASTER PHONO PREAMPLIFIER

With Andrew Jones designing MoFi loudspeakers, Allen Perkins designing their turntables, and their latest fabled designer catch, Peter Madnick, designing their new Master Phono preamplifier ($5000), Mobile Fidelity Electronics seems poised to take over the (hi-fi) world.

Madnick, whom you may recall as the former design manager for Constellation and ELAC and the founder of Audio Alchemy, has been in the audio business for 50 years. He has designed more than 400 products in the past 40 years.

The Master Phono has both current-mode and voltage-mode inputs. In Madnick's words, "This allows you to plug in a low-impedance cartridge without needing to fuss with cartridge loading." If none of the voltage input's 10 loading presets work with your cartridge, you can opt for the RCA jacks that allow you to add your own resistance and capacitance. The front panel includes meters that, in conjunction with selectable tests, allow you to optimize cartridge alignment. The power supply sits in a special chamber in the front of the unit, separated from the analog amplification section by noise-defeating galvanic isolation.–**JVS**

### HEGEL MUSIC SYSTEMS H30A AND P30A

Hegel introduced the Hegel Reference H30A power amplifier and the P30A preamplifier, which supersedes the H30 and P30, respectively. Hegel CEO, founder, and lead designer Bent Holter was on hand along with Anders Ertzeid, who called himself "VP of This and That," to share details. The amp and preamp are both analog designs. (The "A" stands for analog.)

The redesigned Hegel H30A power amplifier is a monophonic design—a pair can produce about 1100Wpc—but an extra set of inputs allows it to be run as a stereo amp outputting about 350Wpc. You might expect a bit more distortion in stereo mode; Holter remarked that it's the good kind of distortion, like you might find in a tube amp. He mentioned that over the last four years he'd sought out—and finally found—new types of FET devices that are as good as older ones but that are still in production. Resolution is increased, reportedly.

Hegel's P30A preamplifier has been redesigned with a new gain stage, and Holter said he'd found a "different solution" for the volume control. Details are proprietary, but in essence, four potentiometers are used in parallel, and the volume dial's precise position is digitized before the signal enters the stepped analog volume control.

The new products' machined aluminum chassis also received upgrades with a wide "V" shape on front. The MSRP is $8995 for the P30A and $18,995 for the H30A.–**JMu**

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## US: MARLBORO, NEW JERSEY & UK: MAIDSTONE, KENT

*John Atkinson*

The product's name celebrating the UK manufacturer's 60th anniversary, KEF's new LS60 Wireless loudspeaker system combines the 12th generation of its revolutionary coaxial 4" Uni-Q midrange/treble driver with two pairs of Uni-Core woofers, mounted back to back on the sides of the slim (5.1"-wide), 43"-tall cabinet to minimize unwanted vibrations. The Uni-Q unit incorporates the Metamaterial Absorption Technology (MAT) first seen in the LS50 Meta standmount,[6] while the Uni-Core drivers were featured in the soccer ball–sized KC62 subwoofer that Herb Reichert favorably reviewed in June 2021.[7] Dedicated amplifiers for the high, middle, and low frequencies deliver a total of 1.4kW, and a digital signal processing (DSP) engine corrects low-frequency phase to optimize

the drive units' time-domain performance.

But the LS60 Wireless is more than an active loudspeaker. In addition to single-ended analog inputs, it has coaxial and optical S/PDIF inputs and Bluetooth, HDMI eARC, and Wi-Fi connectivity. The Wi-Fi connection is compatible with Apple AirPlay 2 and Google Chromecast and plays PCM files up to 24/384 as well as DSD; it also decodes MQA. Each loudspeaker has an auxiliary analog output to connect a subwoofer. The two speakers can be wired together for playback with 24/192 quality, or they can communicate with KEF's low-latency, wireless interspeaker system, which allows resolution up to 24/96. Control of the pair of speakers is with KEF's Connect app, and native apps allow audio to be streamed directly from Spotify Connect, Tidal Connect, and QPlay. Roon Ready certification is expected this coming fall.

The LS60 Wireless is available in three elegant matte finishes—Titanium Grey, Mineral White, or Royal Blue—and is priced at $6999.99/system.

## US: LOS ANGELES, CALIFORNIA

*John Atkinson*

Conventional AC power-conditioning systems universally try to eliminate energy at frequencies other than the 60Hz fundamental. By contrast, Coherence Systems' ADD-Powr AC products use Fourier analysis/synthesis and proprietary software to add "harmonic" energy, which is claimed to increase S/N ratios by 0.5–1.35dB and "reveal an increase in [signal] integrity of as much as 1–2dB in energy."[8]

The new ADD-Powr Symphony I/O extends that concept to Ethernet and USB data transmission. "Instead of developing another network switch, we viewed the problem from a position of harmonic resonance," the manufacturer writes. The Symphony I/O is a pass-through design—there are pairs of RJ45 and USB ports—which applies "harmonic resonance directly to the data stream itself." The Symphony I/O is small; it measures 5" × 6" × 1.5". ADD-Powr writes that "The objective was to generate as much of a harmonic resonant field as possible within a small enclosure." The harmonic resonator circuit features 11 dual-energy antenna coils "to enable electric field propagation," and a switch allows the harmonic intensity to be set to low, medium, or high.

At the time of writing (late May 2022), the Symphony I/O, which is sold direct, was priced at $749.95 rather than its regular price of $1499.95. ■

6 See stereophile.com/content/kef-ls50-meta-loudspeaker.

7 See stereophile.com/content/gramophone-dreams-49-kef-kc62-subwoofer.

8 See add-powr.com/technology.

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**HI-FI NEWS**
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# ANALOG CORNER

BY MICHAEL FREMER

**THIS ISSUE:** Mikey seeks phono standardization, tries another moving magnet phono pre from SW1X, and says goodbye to the OMA K3.

## Fremer sings standards

Whenever I do turntable-setup seminars, I complain to the participants about the lack of cartridge-pin diameter and clip-opening standards. Anyone who does their own setup has experienced it: The connection is too tight or too loose. Forcing the clip onto the pin usually results in a broken-off clip that most end users don't have the soldering skills needed to repair; in the worst case, it can even result in damage to the cartridge when you try to remove the clip from the pin. Too loose a fit may result in a plier squeeze that irreparably collapses or breaks the clip, with the same end result.

I recommend the toothpick fix. If the pin is too big for the clip, insert a round toothpick into the clip to expand it. If the pin is too small, insert the toothpick and then squeeze the clip gently with pliers. If the connection is still too loose, use those pliers again to give it another gentle squeeze.

It really would be nice if the clip people and the pin people would get together and work this all out, don't you think? There are a few nicely made "spring" clips that expand as needed and grip well, but there aren't enough of them out there.

Some standards seem like a good idea but probably aren't. It might be tempting to standardize the distance between the cartridge fixing screws and the stylus tip. That way, every cartridge installed in a particular arm would result in the correct effective length—hence the correct overhang. Standardizing that, though, would require standardizing cantilever lengths, which would limit cartridge-design innovation—not good. Anyway, that's what headshell slots are for.[1]

If you own a Lyra cartridge, perhaps you've noticed a tiny hole near the front of the cartridge's top plate. That's an innovation Allen Perkins devised many years ago when his company Immedia imported Lyra cartridges to America. Perkins added a similar hole to his arm's headshell that lines up with its effective length, so that if the two small holes line up—the one on the headshell and the one on the cartridge—then "overhang" will be set correctly. This makes setting overhang easy with a Lyra cartridge: Place a very small Allen key, a wire, a paperclip, or anything that fits snugly through the headshell hole, and adjust the cartridge until the Allen key (or whatever you used) slips into the tiny hole in the top of the cartridge. Tighten the screws, and you've nominally set overhang for whichever alignment Perkins chose to implement.

I write "nominally" because if the cartridge's stylus rake angle is way off, it will affect the stylus position, as WAM Engineering's J.R. Boisclair has observed in his cartridge inspections. Even so, you're now close, and quickly, so this was a worthwhile innovation. Perkins hoped his free innovation would be adopted by other arm and cartridge manufacturers, but unfortunately that never happened. It's not too late! At least Lyra still adds the hole.[2]

What else? The industry really needs to standardize ground lugs on phono preamplifiers and tonearm grounding cables so that they are 100% compatible. A good start would be to mandate ground-wire lugs that are banana plug–compliant, so you (or, better, manufacturers of tonearm cables) could solder a banana plug to the end of the ground wire so that you don't have to unscrew a binding post and wrap a wire around it and then tighten it, or, worse, try to cinch down a screw onto a tiny spade lug that's too small to fit over the post's larger diameter. Ground wires could be terminated with a socket into which various diameter spade connectors could be click-fitted. Or—here's an idea—one or more of the cable companies should come up with an accessory kit so you could cut the end of your ground wire, connect a socket, then use the appropriate spade lug. Better still, have a Zoom meeting and decide on a standard; I like bananas. Meanwhile, on Amazon, for around $6 a set, you can order 10 alligator clip–terminated wires, a good workaround for the ground wire/lug incompatibility problem.

There needs to be a standard, or maybe a stricter standard, for center-hole placement/groove eccentricity in vinyl record pressing. Too many records these days are pressed eccentrically, which produces audible wow. We spend a great deal of money to get speed-stable turntable performance, only to have it messed up by record eccentricity. Remember Nakamichi's Dragon-CT Computing turntable? It measured and automatically corrected eccentricity, but since then no one has.

As I was writing this column, an email came in from a friend alerting me to a new device, the DS Audio ES-001 Eccentricity Detection Stabilizer, which can fix this problem if you are willing to expand the spindle hole.[3] This product will be debuted at Munich High End, which is next week as I write this. I'll be reviewing it and happily disfiguring some wow-y records. Next, someone should invent something to refill the hole once the center is moved.

This isn't about standards exactly, or maybe it is: But could we please achieve some kind of consensus on the best approach to ultrasonic record cleaning? There are many conflicting opinions as to the most appropriate cavitation frequency—35kHz? 120kHz?—and power: 200W? 300W? There's a right answer. What direction should the cavitation generators face, relative to the records? How far apart can the records be spaced in cleaners that hold several? Is it necessary to add a surfactant to break up the surface tension? And how can I be sure my cleaner is really cavitating?

Charles Kirmuss, a man of a thousand wild claims, many (not all) of which I think are true, uses the aluminum foil test to demonstrate not only that his machine cavitates as promised but that most of the others do not. I've reviewed supposedly cavitation-based cleaners that do not pass the aluminum foil test, but the visual and sonic results make clear that these machines clean more effectively than any vacuum machine. They leave the record with a shine that goes well beyond the "bubbler wet/wash" Mr. Kirmuss claims these machines are. Is it possible that these other machines just cavitate more gently?

I'd love to moderate a panel with all of the cavitation manufacturers with an ultrasound science expert on hand to clear up

1 SME's approach of making it easy to precisely vary the pivot-spindle distance is also a fine solution to the problem.

2 Except in the Etna, apparently.

3 See p.31 for a photo and ds-audio-w.biz/products/563.

the confusion, misinformation, and bullshit.

While I'm on my high horse, I'd also like to address the sloppy, imprecise way that cueing mechanisms attach to armrest platforms—usually with a single grub screw. Loosen it, and if you are not careful, the mechanism falls through the opening—which makes adjusting it more difficult and stressful than it needs to be, and sometimes that single grub screw locks the cylinder in at an angle. Two grub screws would be better—but why can't we have this on a mini worm gear kind of drive, similar to what Kuzma uses for its armtube's rotating azimuth adjustment?

## THE SW1X LPU III BALANCED MOVING MAGNET PHONO PREAMPLIFIER

A year ago, in Analog Corner #310,[4] I reviewed the SW1X Audio Design LPU I MM phono preamplifier, which is available in a variety of iterations. At the time, the version I was sent for review sold for $4195. Few moving magnet cartridge users spend that much for a phono preamp, but I found that mating it with a good step-up transformer produced "classic tube sound" in the best sense of the phrase, and that behind that was *quiet*. I concluded with, "Please, Dr. Roschkow, produce a mono version, ideally with multiple EQ curves.

Meanwhile, the LPU I is a great, cost-effective way to go, even in the costliest of systems."

So when I was offered for review the bigger, more costly SW1X LPU III, I bit. Like the LPU I, the LPU III is available in a standard edition or with several extra-cost upgrades. I was sent the LPU III Balanced edition ($12,125).

The "Standard" and "Special" versions share the same pure class-A, zero-negative-feedback, single-ended circuit: An input pair of EF86 pentodes drives an active RIAA equalization network (sans series resistors), with an output stage consisting of a pair of *triode-connected* pentodes. The circuit features Audio Note copper foil, Mylar-in-oil signal output and decoupling capacitors, and 5U4GB choke-filtered tube rectification and a copper, flux-banded

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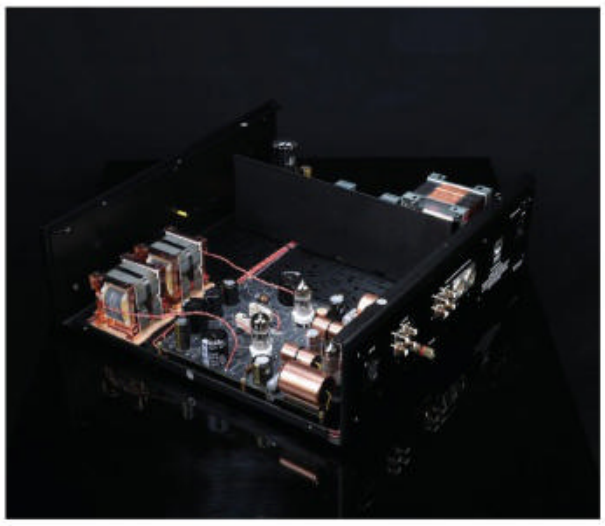

**The phono preamp's airy and convincing spatial staging was matched by its delivery of well-saturated, natural instrumental timbres with rhythm'n'pacing and "punch" to spare.**

mains transformer and choke.

In the Standard edition, the anodes of the signal output tubes connect to resistors "in" and capacitors "out." The Special replaces the resistors with chokes. Dr. Roschkow, the designer, says that choke-loading the anodes makes conventional resistor-loaded circuits sound "lame and dull in comparison."

What about the Balanced edition? It replaces both the choke at the anode input and the capacitor at its output with center-tapped output transformers; the output transformer provides for true-balanced output.[5] Other differences: In the "Balanced" version, 6S45P triodes replace the EL84 pentode tubes, and a 5Y3 replaces the 5U4GB rectifier tube; I think that's the rectifier tube in my Fender guitar amp. In addition, there are some optional upgrades: silver wiring and silver-wired output transformers, Bakelite circuit boards, Black Gates in the power supply, and so on.

The LPU III includes two pairs of RCA inputs (one of which is for use with mono cartridges) plus a stereo input on a single XLR connector, made to fit SW1X's special tonearm cable. There are three output pairs: one single-ended stereo RCA, one single-ended mono RCA, and one XLR

4 See bit.ly/3Npw38O.

5 Because of a temporary shortage of output transformers, the particular sample I auditioned used a transformer that lacks a center tap on the secondary windings; so, while it has the other advantages of transformer coupling—a lower output impedance, for example—this particular sample lacked a true balanced output.

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pair, which in my sample was not true balanced (see footnote 5) but normally would be. The input and output sets are wired "in parallel" and always on.

The LPU III's circuitry is housed in a full-sized chassis, 5.5" high, 17" wide, and 16" deep. The LPU III Balanced weighs 25lb. Only minimal specifications are provided: The output impedance is <20 ohms. "Output noise" is <0.5mV RMS, unweighted. These specs are "subject to change without notice." For people who care about specifications, it's not much to go on, but SW1X products are not *about* specifications. This designer is going for a particular sound based on sonic concepts and preferences.

When I auditioned the LPU I, I summed it up this way: "It's a high value, smartly designed, classic, 'purist,' vacuum tube–based MM phono preamp that achieves all of the positive things such circuits can offer—especially timbral and textural generosity and transient delicacy—at a very reasonable price, while avoiding pitfalls such as noise, limited bandwidth, soggy bass, and constricted dynamic range. It's a sweet-sounding phono preamp, great for jazz, classical, and acoustic music. If you're mostly a rocker, you're better off with silicon. That's just the way it is."

The LPU III Balanced costs about three times what the LPU I cost. According to the designer, it's "the most transparent" of all the circuit iterations. Is it? With more than a year between auditions, I'd be foolish to say yes or no, and you'd be foolish to believe me. But I did what I could to make the auditions equivalent. For example, I used the same cartridge/SUT combos I used in the original review: the Miyajima Labs Infinity for mono, the Lyra Atlas λ Lambda SL for stereo, both run into the Ypsilon MC10 SUT. (An exception: The Bob's Devices Cinemag Sky 20 had been returned to the manufacturer.) I listened to

some of the same records.

But before I set that up, the $449 Sumiko Wellfleet moving magnet cartridge was mounted on the J.Sikora arm and 'table I'd been listening to, having the ride of its life. The Wellfleet's output was EQ'd and amplified by the $672 QHW "The Vinyl" MM/MC phono preamp (which should have won Budget Product of the Year last year in my opinion) or, alternately, the new $149 Schiit Mani 2 MM/MC phono preamplifier (about which, see my review at Analog Planet).

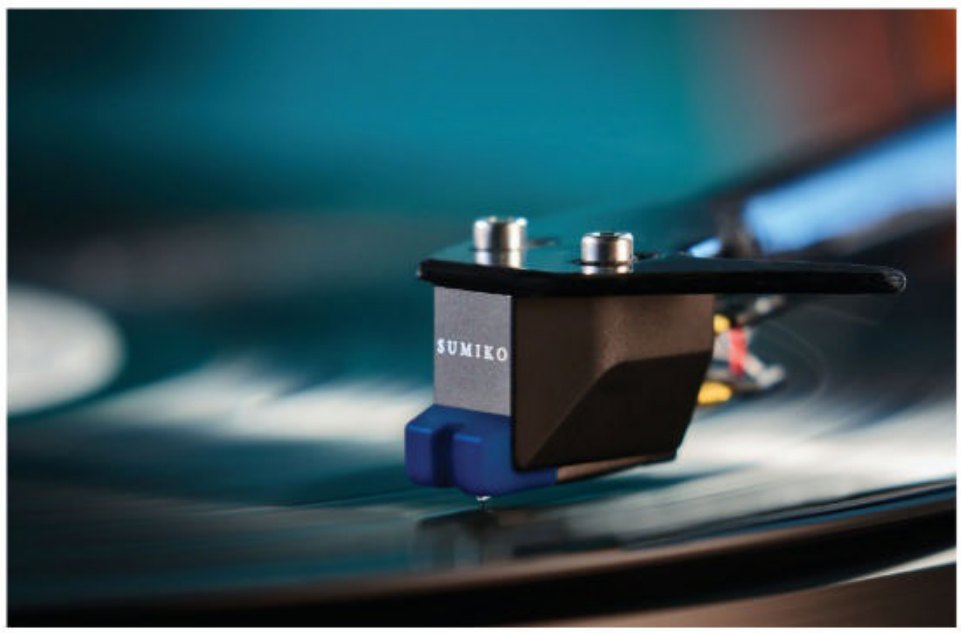
I doubt that anyone buying the LPU III Balanced will pair it with a $449 MM cartridge, but the LPU III evinced the Wellfleet's most attractive qualities, especially in the mid and upper frequencies, where see-through transparency, transient clarity, and precision—completely free of edgy artifacts, grain, and grit—produced a bubble of pleasure my ears wanted to sink into and did, for hours.

Moving to the Infinity cartridge and playing the Record Store Day mono edition of *Chet Baker Sings (It Could Happen to You)* (Riverside/Craft Recordings CR00243) produced the same subtle microdynamic vocal shifts I heard with the LPU I, creating the sensation of hearing Baker from the other side of the microphone.

I used the LPU III to compare the new One-Step "Small Batch" Craft reissue of *Relaxin' with the Miles Davis Quintet* (Prestige/Craft Recordings CR-00227) to a clean original pressing (Prestige 7129) and to the 2002 double-45 edition cut by Kevin Gray for Analogue Productions (AJAZ 7129). The LPU III clearly showed the similarities and differences among these issues—but for the results of that comparison, you'll need to visit *AnalogPlanet*.

I know the album is unobtanium, but the LPU III and the Electric Recording Company's "true mono" edition of John Coltrane's *Giant Steps* (Atlantic/Electric Recording Company ERC 059) provided, in one sitting, a year's worth of musical and sonic pleasure.

A Belgium-based producer named Tom Callens sent me two new, all-analog records he has produced, both by the "Gen-X" conservatory-trained septet Lester's Blues. *Radio Rhythm* (Sing My Title SMT-033LPA), which was just released, was recorded live to analog tape with all seven musicians standing around a single, AEA R88 stereo microphone, in which two ribbon transducers are fixed in a Blumlein configura-



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tion.[6] The records were mastered and cut to lacquer by Rainer Maillard at Emil Berliner Studios in Berlin. *Radio Rhythm* was produced in a run of just 300 copies. You can order the two records at Bandcamp, assuming they are not sold out by the time you read this.

The LPU III's transparency and 3D presentation made me feel like I'd been pulled right into the room where the group performed. The phono preamp's airy and convincing spatial staging was matched by its delivery of well-saturated, natural instrumental timbres with rhythm'n'pacing and "punch" to spare. On "Easy Living," vocalist Delphine Gardin chimes in believably right *there*—fast, clean, edge- and grain-free with the room acoustic providing a natural, realistic backdrop. These recordings were *made* for the LPU III; I hope Dr. Roschkow gets to hear them.

My reference, the solid state CH Precision P1, with the X1 power supply, produced a different but equally pleasing sensation, the musical event occurring well back in space from where the LPU III placed it. While the colors were somewhat muted and the three-dimensionality less exuberant, the imaging and soundstaging solidity produced an equally convincing picture, though with noticeably less air.

**Top:** Wilson Audio Specialties' Pedestals; **above:** DS Audio's ES-001 Eccentricity Detection Stabilizer.

That was compensated for by the P1/X1's bottom-end weight and solidity, which had me concluding, as I did for the LPU I, that while the SW1X LPU III is easy to recommend for classical and acoustic jazz, rockers in need of full electric bass extension and transient grip should look elsewhere.

Aiming to address that deficiency, I placed a trio of Wilson Audio Specialties Pedestals (below left), and then a quartet of Lehmann Audio 3S feet, under the LPU III chassis, which is not especially rigid. Both sets of footers noticeably improved bass focus, though not extension. If you buy any LPU, I'd recommend investing in some good feet!

If you don't like the LPU I, you won't like the LPU III. If you like the LPU I, you'll also like the LPU III. I certainly did, and the added mono input is great for mono fans.

Is the LPU III Balanced worth three times what the LPU I costs? As I said earlier, I auditioned the two products a year apart, so I really don't know. In some ways, Dr. Roschkow's healthy obsession with this basic circuit design, which he offers in so many colors, flavors, and options, reminds me of the late Bobby Palkovic of Merlin Music Systems, who over the years refined his VSM loudspeaker almost to the point of obsession.[7] Each refinement delivered incremental improvements to what was already a wonderful-sounding speaker. Ultimately, though, it was the same two-way box. Dr. Roschkow is doing something similar with his LPU.

Maybe the best choice is somewhere in between. If you are considering the LPU I, don't go for the least expensive version. I take the doctor at his word when he says choke-loading the anodes makes conventional resistor-loaded circuits sound "lame and dull in comparison." The LPU I he sent me for review was resistor-loaded. If you have a chance to hear either that one or the LPU III Balanced, there's little chance you'll find it "lame and dull."

6 The first Lester's Blues record, which was released in 2018, wasn't quite as purist. For that one, each musician had a microphone, and the feeds were mixed live, on the fly, to two-track analog tape. To purchase the records (or the download, or the same music on CD), visit lestersblues.bandcamp.com.

7 See stereophile.com/floorloudspeakers/439/index.html.

8 See my review in Analog Corner #314, at bit.ly/3BLmyvg.

## OMA K3, BYE BYE

Today, the OMA K3 turntable, which has been providing great musical pleasure here for more than a year,[8] exited the building. I can't afford it even at an accommodation price. If I could, I'd buy it in a heartbeat.

Ever since it was delivered for review more than a year ago, it has performed flawlessly, with no tweaking or adjusting of any kind other than cartridge changes, and those were made pleasurable by Frank Schröder's ingenious arm design. The original Xenon rectifier tube continues its purple dance behind glass. This turntable had a great deal of use.

Will I miss it? Maybe not, because it has been replaced by the prototype K3 that was here before the production unit arrived. The prototype is mechanically and sonically identical to the production version, different only in some cosmetics. OMA's Jonathan Weiss kindly spruced it up with a new, flat black paint job. I think I like this "punk" look better.

This version I *can* afford, and I'm buying it. The less-costly OMA K5 will soon make its debut. I look forward to reviewing that one, too. ■

### CONTACTS

**SW1X Audio Design,**
Clartes Ltd.,
10 Feering Rd., Coggeshall, Essex CO6 1RN,
United Kingdom.
Tel: +44 (0)13 7656 2402.
Web: sw1xad.co.uk.
SW1X is distributed in the US by the Lotus Group
Tel: (415) 897-8884;
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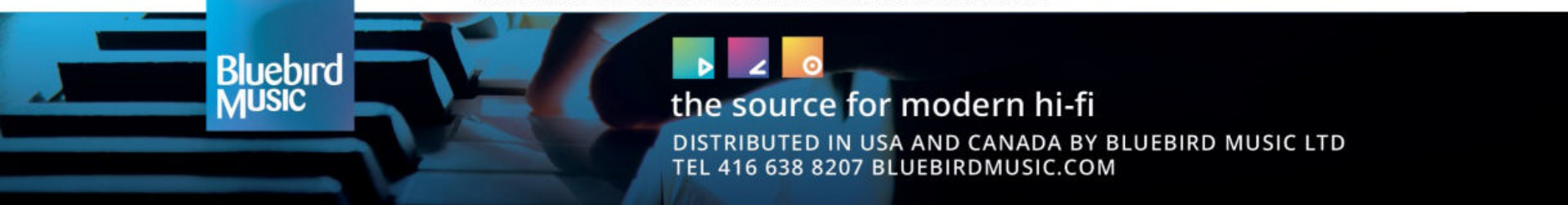


# GRAMOPHONE DREAMS

BY HERB REICHERT

**THIS ISSUE:** In which Herb tries a loom of high-end Cardas wire.

## Wired for beauty

I was born an obsessive reader and a compulsive tinkerer. During the '60s, I subscribed to *Popular Science*, *Popular Mechanics*, *Hot Rod*, *Car Craft*, *Motor Trend*, *Road & Track*, and (of course) *Stereo Review* and *High Fidelity*. Every one of those magazines presented articles discussing the importance of upgrading stock wiring to better-quality "premium" wires, citing improved electrical performance and greater reliability.

That was a time when drag-racing cars began using thick, "fuel- and flame-resistant," silicone-sheathed wires between magnetos and spark plugs. Every street rodder who could afford it sported a Mallory Super Mag distributor. Exposed engines were the norm, and a Tach-Drive Super Mag with expensive, bright-colored spark-plug wires was a status symbol on street rods. Even the humble act of replacing the black-rubber–sheathed wires on your daily driver with the five-times-more-expensive bright-red silicone-sheathed Mallory or cadmium-yellow Accel cables proved you were serious about high performance. Likewise, at home with your hi-fi, abandoning lamp cord and rolling your own better-quality speaker cables proved you were serious about high-quality sound.

Magazine articles focused on wire gauge, conductor purity, strand geometry, and dielectric material. I remember reading, in an Audio Engineering Society article on telephone communications, that the difference between conductor and dielectric time constants was an important factor for speech transmission. Cable science was a hot topic during the Summer of Love.

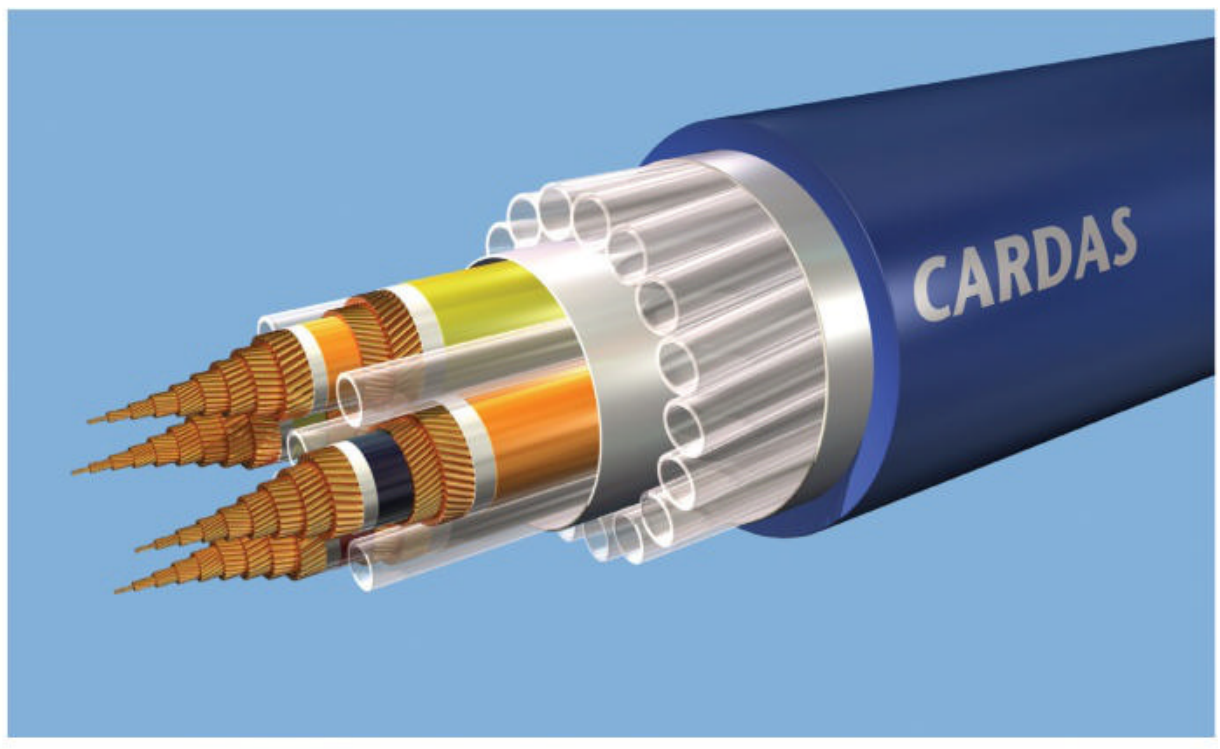
Hi-fi magazines encouraged readers to experiment with heavier-gauge, high-purity copper wires in either solid-core or multistrand configurations. They advised enthusiasts that speaker wires affected sound character differently when deployed in parallel (as in lamp cord) than in twisted pairs. During my first year in college, I DIY-tried every such speaker-wire configuration. After two semesters of experimentation, I determined that loosely twisted pairs of 14-gauge solid-core wire best captured the snap of the snare and the leading edge of piano notes, while tightly twisted pairs of 14-gauge multistrand best displayed the pure tone of sopranos and the wavering textures of piano sustain. My annoying, high-IQ, drag racer, bass player, radar technician buddy Bill Brier said repeatedly that vacuum, then air, then silk followed by cotton were the most effective dielectrics for accurate signal transmission.

So here we are, 50 years later, still debating the best way to make audio cables that preserve the leading edge of plucked, strummed, bowed, and hammered notes, as well as their full decay. And here *I* am, still looking for wires that can do that.

Fortunately, I learned a few things during those 50 years. For example, when comparing two cables, I make sure to note the *degree* of effect each cable has on the sound of my system. I assess the *quantity* of change. If that quantity is small, it's likely not important. If the quantity is large, I try to assess it qualitatively. Which wire preserves the signal best? Which is more accurate? These are abstract, system-dependent queries that every audiophile must answer for themselves, by listening.

Certain things—photons, gravity, beauty, love, art, audio accuracy—are in a sense invisible, yet they're experienced directly. When pianos and sopranos sound right, I know I am having a direct experience of accuracy.

One other potentially important thing I've learned from fiddling with audio wires: Original analog signals, like the ones I've heard from 15ips tapes, always display a natural harmonic halo, a tangible radiant aura. When this halo is present during playback, I know I am experiencing a good level of accuracy. I am not sure where audio signals acquire this radiant effect. Maybe it's from ribbon microphones? Or the recorder heads? Or the tubes in the microphone preamp? Or the Mu-metal transformer cores? Maybe it's because more low-level harmonic information (maybe –60dB



from the fundamental signal) is making it through the system? All I know is that the more I listened to LPs and analog tape, the more I recognized that harmonic halo. When I began using Koetsu cartridges, it became extremely obvious. But it wasn't there when I listened to CDs.

Now I am noticing that halo again—not just via triple-A analog but while streaming contemporary digital recordings through my dCS, HoloAudio, and Denafrips DACs. That same shimmering aura, or something very much like it, appeared in force when I switched from audio cables costing hundreds of dollars to more comprehensively engineered and meticulously manufactured cables costing thousands of dollars. I noticed it first in Gramophone Dreams #61[2] with the AudioQuest's ThunderBird interconnects, and I noticed it again this month with Cardas Audio's flagship Clear Beyond interconnects and speaker cables.

## The wires I've tried

I have not used lamp cord for speaker cable since Annette Funicello was stuffing Wild Bikinis.[1] In the early '70s, I switched the connection between my modified Dynaco Stereo 70 amplifier and my Large Advent speakers from a homemade, braided, stranded wire to an unbraided solid core. I thought it tightened up bass transients. When I switched to the Hafler DH-200 solid state amp, I went multistrand again with Fulton and Monster Cable. I thought both took the hard edge off the DH-200. When I built tube amps in the '80s, I advocated for cloth-covered NOS Western Electric (WE) wires. I made all my DIY interconnects with twisted, unshielded pairs of WE wire and Switchcraft connectors. In the early '90s, I became a full-on Kimber Kable fanboy/devotee, using Ray's silver and copper wires as interconnect, speaker cable, and hookup wire inside my DIY amplifiers.

Silver Kimber Kable introduced me to what I call the "silver aura," a type of radiance much like the shimmering harmonic halo I experienced with analog signals. I thought this luminous aura made recordings sound beautiful and luxurious but still pure, naturally bright, and microscopically detailed. I was predisposed, therefore, to the silver-wire sound when I took over the US distribution of Audio Note Japan in 1993. Audio Note's hand-drawn silver litz seemed relaxed and natural. I used Audio Note's silver wires exclusively until 2003, when I sold off all my fancy amps and expensive wires and reverted to a much simpler system: a Linn LP12 turntable, a Creek 4330 integrated amplifier, and my BFF Rogers LS3/5a speakers, on wall brackets. With this system, I used copper wires from the $100 end of the AudioQuest line.

I lived happily with what I call my "British Home Office System" until 2014, when I began writing for *Stereophile* and realized I needed to investigate how far cable engineering had advanced since Annette was a Mouseketeer. Now, here I am, worshipping deceased opera singers transported to my little room through thick, high-tech copper cables that cost several thousand dollars per meter.

## Cardas Clear Beyond interconnects

Great opera singers like my beloved Maria Callas supercharge the air in front of them with the purest tones and the most dramatic dynamics. They electrify large halls to the point where the audience feels the song's energy penetrate their being. My favorite audio systems mimic this effect: They put sound into the room with vigorous, tangible force. The singer's raw energy captured on the recording is not lost. It is projected in an exciting, believable fashion.

Only a few months ago, I could not have imagined the amount of change I experienced when I removed Cardas's entry-level Iridium interconnect between the dCS

Bartók DAC and Genelec's G Three active speakers and replaced it with that maker's flagship Clear Beyond interconnect. Cows from the next county came running on hearing the intensity and force of Callas's voice performing Georges Bizet's "L'amour est un oiseau rebelle," from *Carmen*, on *Pure Maria Callas: Callas Remastered* (24/96 FLAC Warner Classics/Qobuz). When I inserted the Beyond interconnect, the apparent volume of the recording venue expanded dramatically—and with that expansion came an equally dramatic sense of separation between the supporting forces of the Orchestre de l'Opéra National de Paris and the Choeurs René Duclos. Moreover, I noticed a newfound well-sortedness and a new form of dark quiet—a silence quite unlike any I'd experienced before. Switching from Cardas's budget-priced, $125-per-meter Iridium to Cardas's $4250-per-meter Clear Beyond changed my system's sound character as much as changing phono cartridges or DACs: The Bartók DAC became more silent, grainless, full-spectrum, and beautiful-sounding than it had been with any of my other cables. Right away I wondered how much of this radical quiet was the result of the Cardas cable's extensive shielding.

I notice things like grain and noise most

easily when they suddenly go away. When I installed the Cardas Beyond cables, it was instantly clear how foggy and restrained the gray-sheathed Iridium had been. This large upgrade in clarity and quiet was similar to the effect I encountered when, in Gramophone Dreams #61,[2] I switched from AudioQuest's budget Red River interconnects to their not-budget Mythical Creatures ThunderBird. The main difference in sound quality between these two popular cable brands was that the AudioQuest ThunderBird made recordings sound dramatic, rapturous, spread out (soundstage-wise), and transparent, while the Cardas Clear Beyond endowed the sound from the Genelecs with a sublime

1 See imdb.com/title/tt0059287.

2 As we go to press, GD#61 is not online, but it will be by the time you read this.

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quiet, a grand spaciousness, and seemingly infinite LSD detail. Both cables endowed recordings with an aura-like radiance similar to what I experienced with analog tape and silver cables.

The finest audio systems are admired for their ability to resolve ambient detail and let music emerge from black, silent backgrounds. The Cardas interconnects specialized in both capabilities. But those are just hi-fi traits. The Clear Beyond accomplished something I feel is more important: It gave consistently clear structure to the sounds it reproduced, emphasizing the interconnectedness of harmonic forms. This, in turn, made the music feel whole and easy to connect with.

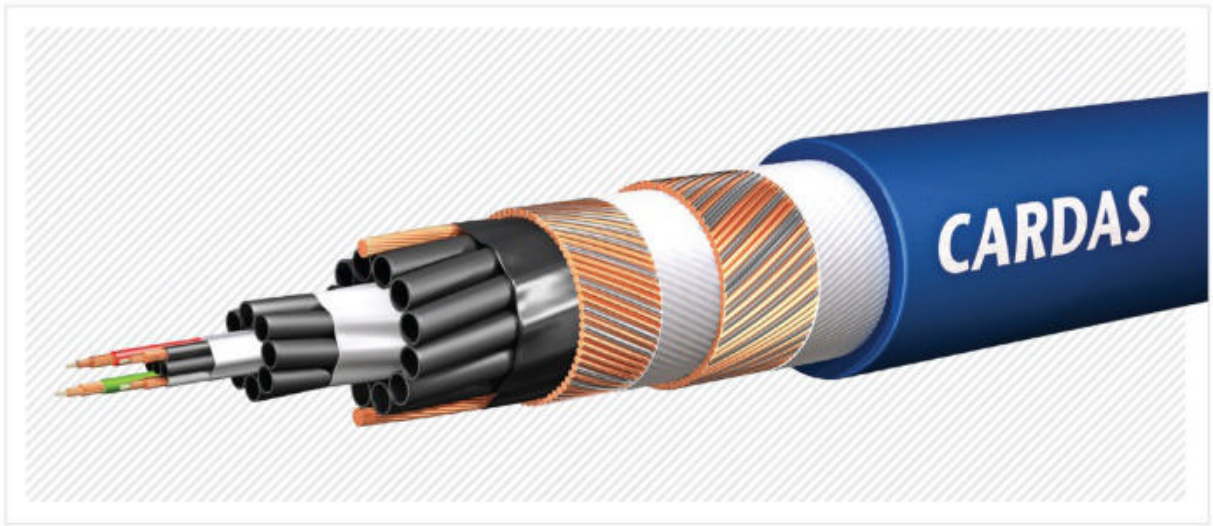
The sonic effects of interconnects I've just described, while possibly capturing a glimpse of the innate "personality" of two different cable geometries and two different approaches to cable design, represent nothing more objective than what I observed with my own specific system in my own room. When I used these wires in differently configured systems, the degree and nature of these effects varied noticeably.

## Setup two

My second cable-review system added one more interconnect and two new components. Genelec's G Three speakers were connected to HoloAudio's incredibly uncolored and uber-transparent Serene line-level preamplifier, fed by the Denafrips Terminator Plus DAC, to form a very revealing system. I tried AudioQuest's ThunderBird and Cardas's Clear Beyond in two positions: between the DAC and preamp and between the preamp and speaker. The cables accomplished slightly different things in each position.

This was an important experiment, because I am currently trying to find the most beautiful and excitement-inducing interconnect to use at the output of the Terminator Plus DAC. At this point in my reviewing journey, Denafrips's flagship DAC is delivering reference-level audio splendor: It makes recordings feel vivid, present, sensuous, and stoner-level hypnotic. The T-Plus makes soundwatching a nightly habit; it makes recorded sounds "look" like they are emerging from a black, before-the-universe-began abyss. The extreme tactile quality of this darkness is the Terminator Plus's biggest plus.

Before the Cardas Beyond arrived, I had been completely happy using the sounds-like-its-name ThunderBird out of the Terminator Plus. The T-Bird goosed up the T-Plus's dynamics, drive, and clarity in a way that made it sound more awake. After liking the Bartók with Clear Beyond



so much, I felt certain the flagship Cardas would allow the T-Plus to expose even more recorded beauty—and in its own way, it did. But the Cardas Clear Beyond's beauty added to the Denafrips's beauty felt like *too much* beauty. Like a Rococo boudoir. Like a Fragonard painting. I quickly missed the just-right brightness, bounce, and rhythmic drive the ThunderBird extracted from the T-Plus.

The sonic differences I've alluded to are not subtle. Subtle differences are not interesting. The only sonic differences I care about are those that affect every recording, every time I listen. I believe the differences I've described would be obvious to anyone who listened for them.[3]

Most cable manufacturers would like users and reviewers to perceive their products as best employed in full-system looms. I cannot fault them for that except that electrical conditions can vary radically between connected components. Because I view audio cables as active, component-level participants in the electrical impedances drama, I continue to examine each connection separately.

My reference system consists of many different brands, and because I switch components frequently, I tend to associate specific cables with specific components. For example, I have a favorite tonearm cable (the energy-preserving AMG reference), an MC SUT to RIAA preamp favorite (the texture-preserving Auditorium 23), and a phono pre to line-level preamp favorite (the invisible Black Cat). Now, for my system's most important connection—the Bartók DAC to the Serene preamp—my favorite is the Cardas Clear Beyond, balanced. I have also just observed that the Denafrips Terminator Plus becomes enjoyably strong and alive with AudioQuest's ThunderBird. So, I am hesitant to throw a single-brand house-sound blanket over the whole, constantly evolving system. I fear that if I weave my system with a single cable brand, it will (a) look like a product endorsement and (b) influence the outcome of every component I review. That said, many of the finest audio systems I've encountered consisted of amps, speakers, and cables from a single manufacturer.

## The Cardas Loom

In later installments of this ongoing cable study, I will describe and compare the diverse construction and design strategies of the brands I have auditioned. I will also compare speaker cables by brand and outline the drama of their difficulties. But for now, I want to describe how my bunker system responded to a full loom of fully broken-in Cardas Audio Beyond cables.

I ran balanced Clear Beyond from the Bartók DAC to the HoloAudio Serene preamp and single-ended Clear Beyond from the Serene to Pass Labs XA25 amplifier. I used Clear Beyond speaker cables from the XA25 to my Falcon LS3/5a "Gold Badge"

3 It's worth pointing out that we all hear differently, with—importantly—a different sense of proportion. To Herb, these changes are not subtle, but others may perceive them as subtle—yet, even so, subtle changes can be very important in conveying the life and emotion in music. **—Jim Austin**

speakers.

The effect of the full Clear Beyond loom was to saturate the entire playback chain with a markedly luminous character. The first words that came to mind when I played "Pierre" from Alexandre Tharaud's album *Barbara* (16/44.1 MQA, Erato/Tidal) were breathy, intimate, and dreamlike. That accurately describes my visual impression of the Cardas's soundspace. The Clear Beyond endowed this moody, exquisitely performed homage to Monique Andrée Serf (a popular French cabaretière who worked under the stage name Barbara) with that radiant, halo-like aura, transporting my mind to the smoky footlights in a wartime cabaret. My experience suggested that the Cardas cables delivered more low-level information than any other copper cables I've used.

I do not regard this attractive, dreamlike vibrancy as a coloration or deviation from neutrality. The Clear Beyond was never soft, hazy, or unfocused; its saturated tones were not exaggerated. It had finely detailed imaging, near-infinite depth of field, and exquisitely subtle dynamics. After a week of listening, my brain adapted to the Cardas loom. Its dreamlike qualities slipped into the background, replaced by a day in, day out sense of focus and precision. My Falcons played more sensuously—more breathily—than ever. Pianos and sopranos sounded as I thought they should. What more could I want?

## Now

Some audiophiles select their system's cables not on the basis of comparative listening but through ill-conceived notions about how certain cables affect a system's character. I know this to be true because I too am guilty of it.

Until lately, my strategy, as a blue-collar *Stereophile* reviewer, has been to choose solid, well-built cables costing less than $1000 per set from popular, long-established brands. My comparative listening experiments with different brands and different models within brands had been limited and inconclusive. They centered mostly on whether a given budget cable made my system, or the component it was connected to, more or less clear and engaging. I simply had no idea how much flavor and excitement got lost in those pedestrian wires. Each of my chosen cables made recordings sound clear, tone-correct, and alive, which was all that concerned me. The ones I deemed most invisible—those that appeared to affect the sound the least—I put in the most important places. It never occurred to me that the cables that affected the sound the *most* might be the *best* for my system. Even after a decade of using expensive silver cables, I still didn't fully grasp a point that is now obvious: We might just get what we pay for.

## Postscript

Some audio cable manufacturers explain their technologies in great detail, with high-quality photos, videos, and diagrams. Cardas has one of the most informative websites in audio. I encourage readers to visit it—and also the company's YouTube channel. (See the Contacts box below.) On the website, in addition to information about their engineering, you will find sounds and images of the company's home in breathtaking Bandon, Oregon, of the people behind the scenes, and of the beautiful machines that make Cardas's wires. ■

### CONTACTS

**Cardas Audio Ltd.**
480 11th St. SE
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# MEASUREMENT BEYOND THE ATOMIC LEVEL

The setting is surreal. As you drive into the Satsop Business Park in rural Elma, Washington (pop. 3500, max), eyes immediately fixate on the looming 481'-tall cooling towers of an abandoned nuclear facility.[1] Remnants of the largest nuclear power plant construction project in the United States,[2] the site was mothballed in 1983, in part due to concerns triggered by reports of what had happened at Pennsylvania's Three Mile Island four years earlier.

The abandoned site's reactor and turbine buildings now house NWAA Labs, a 13-year-old independent laboratory that tests loudspeakers and materials for the audio, acoustics, and construction industries. NWAA Labs' founder is Stanford-educated electrical and mechanical engineer Ron Sauro, 76. Initially, Sauro juggled work at NASA with performing as the Vox organist of the 1963 Gold Record–earning group the Rivieras.[3] Sauro later became a sound system designer/installer for churches and arenas. He began measuring speakers and contributing papers to the *Journal of the Audio Engineering Society* circa 1990 and opened his first speaker-measuring operation, Western Electro-Acoustic Labs, in 2005.

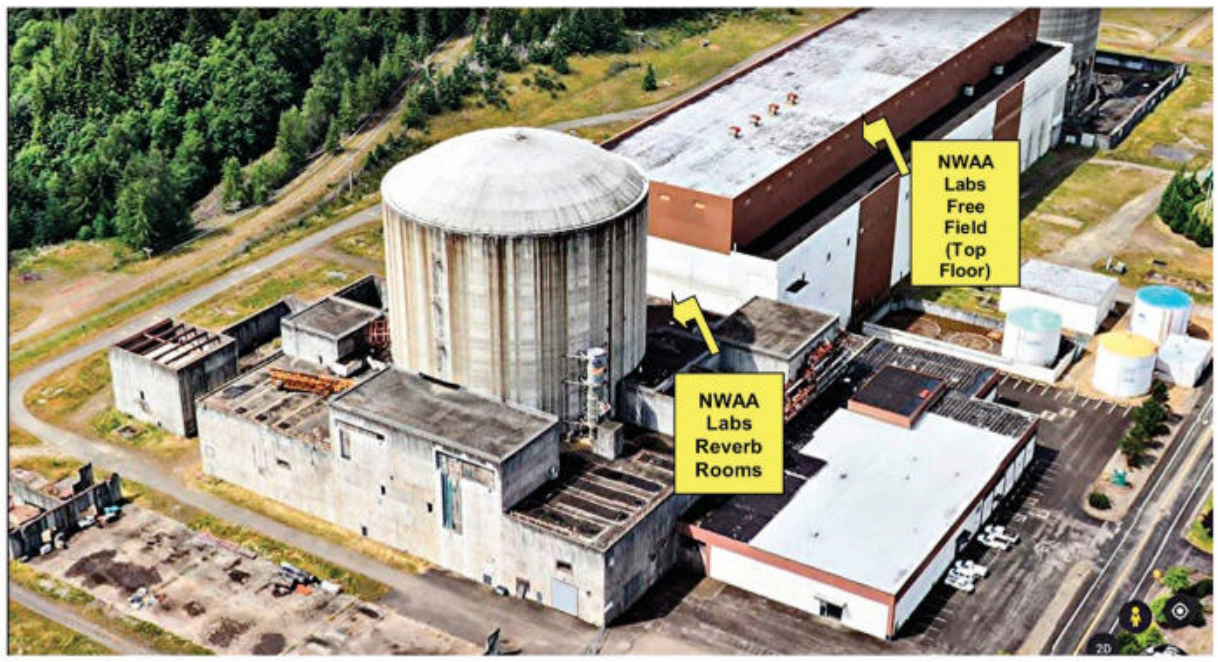
To say that NWAA Labs is unique is a grand understatement. The lab, which boasts the two largest reverberation chambers in the world, occupies a temperature-stable building designed to withstand a 10-megaton nuclear blast on its roof and a magnitude 10 earthquake. The building rests on an exceedingly stable sandstone layer roughly 10,000' thick. After excavating a 500' × 500' hole to a depth of 300', the Washington Power Supply System (WPSS) dug a 6"-wide trench around the foundation slab. By separating the foundation's sides from the earth's crust, the trench was intended to prevent earthquake damage and transmission of vibration and noise.

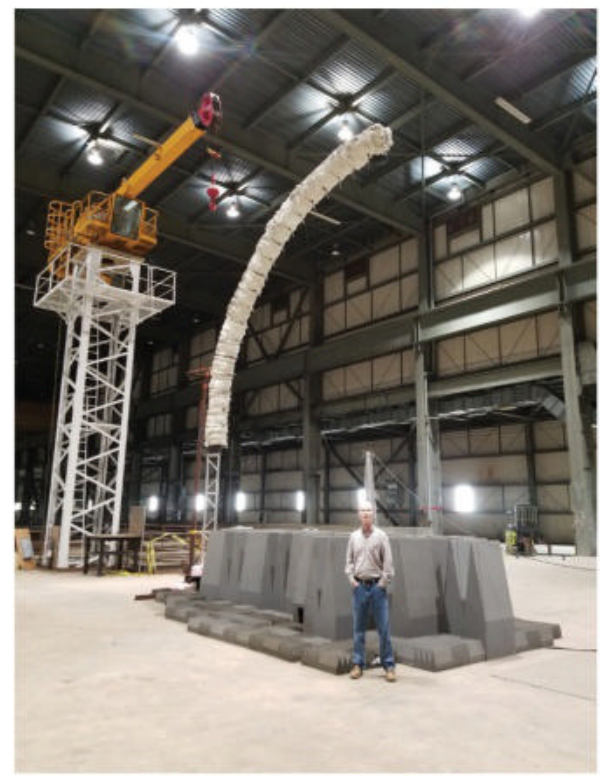
Sauro likens the facility's construction to three nested Russian matryoshka dolls. He describes the structure in some detail: The outer-building walls are 5' thick and contain eight layers of 3" rebar. Forty feet inside those walls, a 6" trench surrounds an inner building of identical construction. Inside this building, within another, 1'-wide trench, a 3'-thick circular containment vessel, also of concrete and rebar, was built to hold the reactor. Three nested structures were thus created, each with its own floor, ceiling, and walls. A 40'-deep depression was then excavated underneath the containment vessel and made into a water

1 See dailymail.co.uk/news/article-3158297/Eerie-images-abandoned-nuclear-power-plant-Elma-Washington.html.

2 Intended as a 3.9-gigawatt nuclear power plant that didn't need active pumps for cooling, it was on course to be the only completely passive Series 2 reactor in the United States. Instead, it was eventually given to Grays Harbor County, which turned it into a business park.

3 He also played Hammond B3 briefly with Santana and the Doobies.





**Clockwise from top:** This converted nuclear power plant is now used for measuring loudspeakers; ground view showing the Free Field Lab and the Reverb Room; Norm Varney in front of the microphone array.

reservoir. In case of a meltdown, the vessel's contents would drop into the reservoir and the fuel would solidify rather than burn.

In November 2021, I accepted an invitation from acoustical engineer Norman D. "Norm" Varney of A/V RoomService[4] to explore Sauro's multifloor laboratory. I joined a facility tour with members of ASA, the 7500-member Acoustical Society of America.[5] After this event, I arranged a four-way Zoom and phone conversation with Sauro, Varney, and *Stereophile* Technical Editor John Atkinson.

When John learned of the chamber's size and its five overlapping modes at 25Hz, he marveled at the labs' capability to conduct extremely accurate power-response measurements.

"At very low frequencies," Ron interjected. "NWAA Labs can measure accurately down to 25Hz because it resides in a floating room inside a floating room, separated from the outside world by roughly 25' of concrete. The room's background noise at 1000Hz is an astounding –43dB!" (This is in reference to a scale where 0dB = 20µPa, the threshold of human hearing—astounding, indeed!)

"It enables us to do some interesting transmission loss [TL] measurements, since we have 140dB on the other side of the TL opening between rooms," Ron said. "We average about –17dB in this room if you measure from 25Hz to 10kHz. That gives us almost 160dB of variation for transmission-loss tests. Therefore, when we do TL measurements, we can do full measurement for all frequencies between 25Hz and 10kHz with no notations or compensations."

NWAA Labs serves clients worldwide, with about half of its business coming from Canada (whose main measurement lab is the National Research Council, or NRC, in Ottawa). Anechoic chambers, which are used to simulate a *free-field* environment devoid of reflections,[6] are few in North America: Paradigm has one in Toronto; Boeing's, the largest in the US, is 65' × 65' × 65'.[7]

NWAA Labs' "turbine room," which is 650' long, 350' wide, and 80' high—large enough to hold four NFL football fields—is a true free-field space. The roof area is a whole acre. As John noted, it's so large that there's no need to gate impulse responses in this space because reflections are so attenuated after 160ms.

John was fascinated by the room's huge, curved microphone array, which contains 19 matched Earthworks M30 (ANSI Type 1) measurement mikes. The array is 4.1m in radius and is suspended 15' above the floor. Microphones are mounted within $^{1}/_{16}$" of a central point, one every five degrees. Each mike is electronically compensated for distance to one sample at 48kHz.

The diffuser Ron was measuring at the time of our interview sat on a pedestal connected to an LS-360 turntable that could move in increments of one-tenth of a degree. At the mike array's typical distance of 4.1m from whatever is being measured, Ron can accurately measure phase response at 10Hz.

John asked whether at a 4.1m distance it was possible to measure a large speaker and get proper integration of drive-unit outputs. Ron replied, "We know what our limits are. The spacing of drivers cannot exceed 48"." John, who acknowledged his envy, replied, "The big problem with loudspeaker measurements in general is you need to be further away than the largest dimension of the loudspeaker. That's fine for an LS3/5a but impossible for a significantly larger loudspeaker." Ron responded, "We can measure subs all the way down to 25Hz when we support them above our 5'-tall wedges. The wedges you see around the measurement pedestal prevent reflections from the floor. Our biggest sub has been something like 570–600lb. We also do long line arrays with different cabinets, as in a PA system. We use a forklift to drop heavy speakers into place."

When NWAA Labs opened, they focused mainly on pro-speaker measurements. As time progressed, they also began measuring audiophile brands including Bowers & Wilkins and Genelec. "You

4 Varney has used NWAA Labs for testing over the years.

5 See https://youtu.be/JDyvmgMCuNY.

6 "Anechoic," in Greek, means free from echo.

7 The famous one at Bell Labs' Murray Hill, New Jersey, facility—now part of Nokia—where much important science was done, is now used to create art. See youtu.be/wqCjE2WzhBk.

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name it, we've done it," Ron said. "I've measured approximately 300 brands—probably a little over 3000 speakers—over the last 10 years. Speaker measurement is probably about 20% of our business."

## Loudspeaker measurement

After acknowledging NWAA's fantastic ability to measure the far-field directivity, magnitude, and time-domain response of the device under test, John asked, "In your opinion, Ron, which of the measurements best correlates with what people hear? When they say that a speaker sounds 'good,' are they talking about the flatness of response, the evenness of dispersion, the coherence of the time-domain presentation, or the absence of distortion and resonance? Which is most important? My experience with subjective-listening tests is that people will agree if a loudspeaker has elevated low frequencies, but half will say that's a bad thing and half will say it's a good thing. They agree on the perception but disagree on the value judgment."

Ron offered no simple answer. "AES, ASTM, and all the groups that help develop standards have been working for 25 years to come up with a standard that says, 'This sounds good,' and we have not even come close to agreeing. All we can do is objectively describe what we can measure in terms of frequency response, phase response, radiation patterns—the things that don't change, depending upon the flavor of the speaker."

Norm, whose A/V RoomService focuses on resonance and acoustics, noted that even though all currently measurable aspects of speaker response interact with each other to produce the sound that reaches our ears, acousticians typically measure speaker response by playing a swept sinewave or pink noise. After that, they examine one parameter at a time. Our ear-brain system, however, performs multiple calculations simultaneously, accesses our experience, and then passes value judgments.

"This is why you have to spend some time learning how to look at the different measurements and determine how they all integrate with each other," Ron said. "You have to integrate them in your brain and understand that if you take this particular parameter and combine it with this other parameter, it's going to give this type of result. That takes time and experience. You can't just throw a graph out there and expect that somebody who has absolutely no experience integrating these measurements will understand what they're seeing."

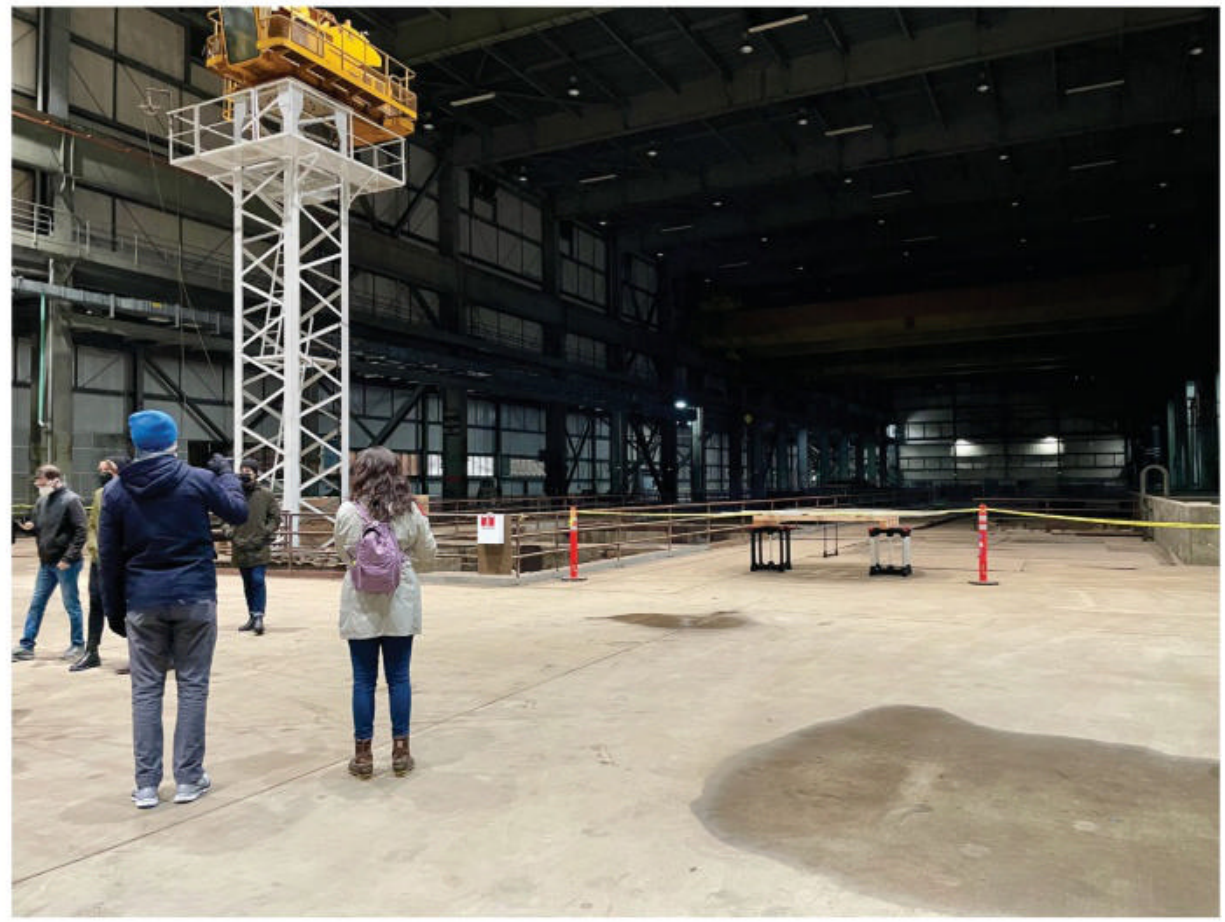
John agreed. "As I wrote years ago, to understand measurements, you have to look at all of the measurements simultaneously. In the measurement sidebars in *Stereophile*, I try to characterize what is happening in ways similar to what you guys are describing and then look at measurements which are so out of the ordinary that they may have an effect on sound *character*.

"One of the things I fall over all the time is the effect of resonances. Floyd Toole and Sean Olive have said that the higher the Q[8] and the higher the frequency, the less likely the resonance will be excited and the less likely that it will affect sound quality. I find that some resonances have a low enough Q and a low enough frequency that I hear them when I'm doing the measurements. Yet, other people out there don't mention the resonance-induced coloration that I'm hearing."

Ron replied that each frequency range has a different driver set and a different far-field point. This distance, called *critical distance*, is where the *direct sound* from the speaker is equal in magnitude to the sound of the *reverberant field*.

John shared an anecdote. "Many, many years ago, I visited the home of the late Alastair Robertson-Aikman, the founder of SME, who had a very big listening room—something like 35' × 25', with a 15' ceiling. He equalized the sound at the listening position to be flat. But the highs were so exaggerated—tilted up like crazy—because he was equalizing the reverberant field."

"There are so many people who think they're experts," Ron lamented. "They take a Radio Shack level meter and say, 'See, it measures equally all the way around, so we have good coverage.' I look at them and say, 'No, you just happen to be measuring the reverberant field far enough out to where it won't show up all your mistakes.' … The only way a speaker owner can properly use measurement for setup is to sit within the area where the direct sound of the speaker reaches them, and sound isn't affected by the reverberant field."



NWAA's free-field room is the size of four football fields–so large that there's no need to gate impulse-response measurements.

## Drowning in sound

"When you're listening to sound in a room, there are two different kinds of sound," Ron said. "If you're within the critical distance from the speaker, you will hear the direct sound of the speaker. If you're beyond the critical distance, you will hear the reverberant field, aka the soundfield that is developed by the room.

"The best way I can describe the room's soundfield is by analogy. Let's pretend that a bathtub is the room, the bathtub drain is the equivalent of the absorption in the room, the input pipe is the speaker or sound source that adds energy to the room, the water is the reverberant soundfield, and

8 John Atkinson says, "Q stands for Quality Factor—it is related to the amplitude of a resonance and the frequency range that it covers."

the air is the direct soundfield.

"If you're sitting in a bathtub with a 1" drain and a 3" input pipe, how long before the bathtub fills up? You've got to think about this for a second, because the drain is releasing water slower than it's coming in. What happens, where? Does it overflow at some point?"

Without hesitation, John responded, "It's going to reach an equilibrium point when the height of the water forces the water out of the 1" drain as fast as it is coming in from the 3" pipe."

"Bingo," replied Ron. "The pressure is going to change. It's the one thing that's not shown. As you increase the level of water, you'll increase the pressure, and the pressure will increase the flow rate. It will stabilize at the point where those all equal out.

"But here's the problem. Let's say you're lying back in this bathtub full of water, and you slowly but surely slip down into the water as you relax. Your nose gets closer and closer to the level of water, to the point where the water reaches your chin but your nose (ears) is in the air (and your ears are in the direct field). Then you keep sinking into the water until it has finally covered your nose and mouth. If you try to breathe (listen), you will drown regardless of how far down your nose is.

"The water is the reverberant field. The depth of your nose in the water is the equivalent of how far back you are in the reverberant field.

"This is what listening is. The reverberant field in a room is equivalent to the level of the water of the tub. Therefore, if you're in the back of the room, you are in the reverberant field, and you're hearing the same level as if you were under water."

"But that would mean you're beyond the critical distance in the room," objected John. "You're sitting a long way away."

"If you get beyond that point, you do not hear the speaker at all," Ron responded. "All you hear is the room."

## NWAA'S RON SAURO ON SHAPE AND ABSORPTION

*Our conversation moved back and forth between absorption and diffusion. When, later, Ron attempted to separate the two, he produced a mini treatise on absorption. Lightly edited, that treatise follows.*

Absorption is the most common treatment used in listening rooms. The measurement of absorption was first described by Wallace Sabine, who compared the reverberation times of a room with and without absorption. This difference was then converted to units of absorption using this formula:

$A = 0.9210(V*d / c)$

where

A = equivalent absorption area in $m^2$,

V = volume of reverberation room in $m^3$,

c = speed of sound at ambient temperature and humidity in m/s,

and

d = decay rate in dB/s.

Most of what we think we know about absorption is wrong! Absorption calculations in use today can err by as much as 85%. The biggest error concerns how important the area of absorption is in the calculation of how much absorption is needed.

Area is not the only factor that affects absorption. In standards used by either ISO (International Organization for Standardization) or ASTM (American Society for Testing and Materials), when absorbers are measured in reverberation rooms, the edges of the samples are covered with a material, such as painted wood or sheet metal, that is impervious to sound. The assembly is taped to the edge coverings and the coverings taped to the floor. This method removes the edge thickness from the calculation of the absorption coefficient. When this method of converting the amount of absorption into a constant was first proposed at an ASA meeting in 1927, it was questioned. But no one proposed an alternative method. The formula was a very simple:

$a = (A_2 - A_1) / S + a_1$

where

a = absorption coefficient of the specimen,

$A_1$ = absorption of the empty reverberation room,

$A_2$ = absorption of the room after the specimen is installed,

S = surface area of the specimen,

and

$a_1$ = absorption coefficient of the surface covered by the specimen.

Under the presupposition that all numbers resulting from this calculation will fall between 0 and 1, this theoretical absorption constant was then described as a mathematical coefficient.

Imagine the shocked looks when results exceeded 1. After the first attempt at an explanation failed, most agreed this was an effect of diffraction of the edge and of little consequence. The phenomenon was then renamed *edge effect* and invoked as the reason for numbers that did not add up mathematically. Even though no one could explain what edge effect was, they blamed it for the "bad" numbers.

As part of the process of measuring *scattering coefficient*, acousticians used the ISO 17497-2 method to determine the absorption of a *circular* sample of *X* area and convert it to an absorption coefficient. Since there is also a different standard ISO method, ISO 354, to measure the absorption of a *rectangular* sample of the same area, we at NWAA Labs thought it might be useful to compare the results of the two methods. When we did, the circular sample measured about 15%–20% less than the rectangular sample, even though they both covered the same area. We repeated the test many times and got the same results.

Next, we began a series of tests where we broke up the area into small segments in different configurations. Our results produced an ever-increasing absorption coefficient. When these tests were plotted on a graph as result vs area, the results were linear to a point where it was 99.9% certain that the ratio of linear edge length to area was the operative denominator in the coefficient calculation. Reports of these experiments in Institute of Noise Control Engineering and ASA papers exposed the ineffectiveness of the absorption coefficient as a true constant for calculations of absorption. Later papers showed that calculation to be off by as much as 85%.

You can change absorption by up to 80% just by changing the absorber's shape. If you take a piece of material, let's say 100 square feet, and you make it into a circle, it will provide the minimum amount of absorption. If you fashion it into a square, it will be just slightly more absorptive. But if you make it into a star shape, you get almost 100% more absorption out of the same piece of material. **—RON SAURO**

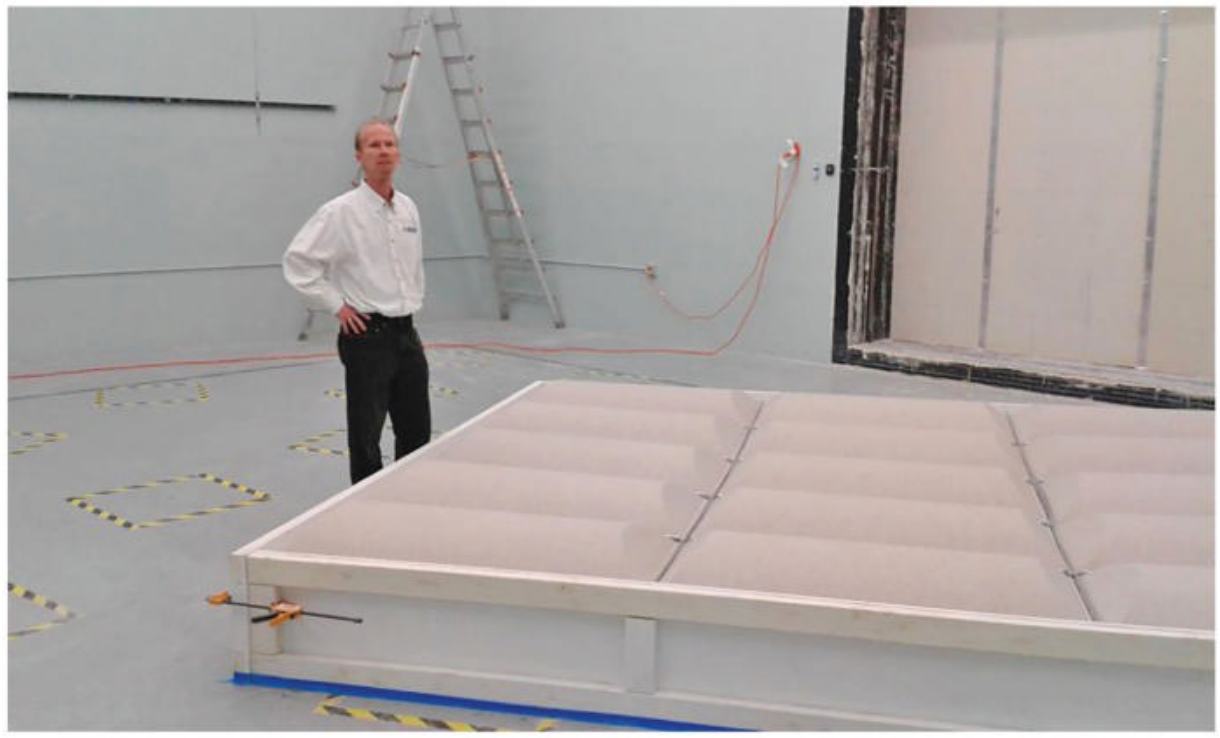
## Diffuser measurement and evaluation

NWAA Labs has been researching diffusion for the last five or six years and is developing a measurement standard for ASTM. Ron claims he can often tell whether a diffusion panel is effective or worthless just by looking at it.

"Because we look at diffusers as though they are a speaker without a voice-coil, we use the same measurement system for both products. At the very top of the microphone arc, behind the microphones and slightly off to the side, is a speaker. The speaker enables us to 'illuminate' the diffuser beneath it with sound waves so we can measure the first-order reflections and determine what's going on.

"We use diffusers in simulation programs exactly as we do a speaker. We can actually group them together and form clusters and then come up with a combined radiation pattern using convolvement techniques. We can create 360° plots to determine how soundwaves hit a spot on a wall and radiate off it."

When questioned about the efficacy of the various diffusion panels, some fancifully constructed, that are marketed to the audiophile community, Ron touted the work of Virginia-based Jim DeGrandis of Acoustics First Corporation. Ron has co-authored a paper with DeGrandis (and with Dr. Hassan Azad) on using laboratory measurements to improve acoustic simulations. Both are active in the ASA. Some of DeGrandis's papers, as well as many by Sauro, are linked to on the NWAA Labs homepage.



Norm Varney of A/V RoomService stands next to a large acoustic panel under test.

"DeGrandis has done some unbelievable research in the field of diffusion," Ron said. "He's come up with a computer program that allows him to simulate what happens

to a design when he changes parameters.

"We've done the same research with diffusion, where shape is again key. I'm sorry, but almost 90% of what's out there, theory-wise, is BS. For example, you can't use a block's length in a 'skyline-style' diffuser to determine the frequency range that it affects."

It goes without saying that the next question from both John's lips and mine concerned the efficacy of audiophile-approved devices. Which of them *do* work correctly?

"Let me put it this way," said Ron with circumspection. "Devices that are based on diffraction scramble the phase. When you scramble the phase, you lose localization. All the things you see, like one- or two-dimensional Quadratic Residue Diffusers, square blocks, and 'cityscape'-type diffusers, are diffractive devices. If you don't mind losing localization, you can use cityscape diffusers behind the recording or listening area, but they are extremely restricted in the frequencies they affect. Most are restricted to frequencies around about 4kHz and 16kHz. They do absolutely nothing below 4kHz.

"Believe it or not, if you want something that will actually move the sound where you want it to, some of the oldest devices out there are still the best. One of those is a polycylindrical or cylindrical unit. In my opinion, I would recommend sections of spheres. You take a sphere and just cut across the chord and stick it on the wall. That's probably your best bet for doing diffusion."

John raised the issue of specular reflections—the mirrorlike reflection of sound waves from a surface—and pointed out that when that reflection arrives at the listening position, the delay between the direct sound and the arrival of the reflection, which has taken a longer path, means that it won't be in phase.

"You've got to think about far field versus near field," Ron said.

John continued, "I always understood that specular reflections are a bad thing because at the listening position, you want to hear the direct sound. All the other energy in the room should be in the reverberant field, where it doesn't interfere with the imaging. Yet what you are saying is you want a specular reflection because the sound will arrive with the correct phase relationship."

Sauro responded that the reflection will arrive with intact phase and retain localization. He emphasized that if you use a cylindrical reflector, the reflection reaches the listener's ears from only one point on the cylinder. Because reflections from all the other points do not reach the ears, phase differential is inaudible. The amount of energy reaching the ears may be tiny compared to the total amount of sound reflected by the cylinder, but it maintains localization.

The floor and platform below the microphone array. The floor is lined with 5' sound-absorbing wedges.

John asked whether a conventional Schroeder-type diffuser was restricted in its low-frequency performance.

"You have to look at the size of the diffuser," Ron replied. "Let's say it's 2' × 2'. If you're farther than 4' away, it does virtually no good because it functions as a point source with a single point of reflection. 2' × 2' looks like a single plane at 500Hz. That is the specular reflection. At 1000Hz, it's barely functional."

"Small room acoustics,[9] which applies to almost all audiophile rooms, can be measured for reverberation," Norm noted. "You want linear reverberation times across as broad an audible spectrum as possible. For critical listening, we are trying to achieve an environment with reverberation times along the lines of about 0.25 to 0.4s from about 125Hz on up, and a little longer tail below 125Hz. If we have too short of reverberations time below 125Hz, it's uncomfortable, because our eyes are not making sense of what our ears hear."

Ron noted that Norm's A/V RoomService PolyFlex diffusion pa nels are among many that NWAA Labs has determined to work effectively in small listening environments.

For more information on absorption and diffusion, consult the papers hosted on the front page of Ron's website.[10] For readers concerned with treating their own rooms, Ron recommends the first two papers, which discuss room acoustics and cost-effective ways to increase absorption.

## Final thoughts and considerations

When I asked everyone to condense their knowledge about loudspeakers into a few simple bits of advice, John replied, "You have to take all the measurements and integrate them in your head.[11] Or you could read the 15,000-word paper I presented at AES in 1997."

Ron added, "You also have to keep in mind what the purpose of the speaker is. Audiophiles want a speaker that has the most even coverage possible at all frequencies."

Just when I thought we had a wrap, Norm returned to that little omnipresent monkey wrench: the room. "Audio reviewers have an incredibly difficult challenge because they are trying to correlate bench-test instrumentation data with subjective evaluations, which, to a huge extent, are predicated on their listening environment. The speaker, the distance, the size of the room, the reverberation times, and the resonances of the room all have a huge impact on the subjective perception of the sound. There's no way you can look at any single parameter and go, 'Oh, that's the way the

9 Smaller than approx. 15' × 15' × 15'. My listening room, which is 16' × 20' × 9', qualifies as a small room.

10 See nwaalabs.ipower.com/Papers%20and%20Publications.html.

11 See stereophile.com/features/99/index.html, stereophile.com/features/100/index.html, and stereophile.com/features/103/index.html.

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speaker sounds.' Not in our lifetimes, most probably."

Ron replied, "In my segment of the industry, we say that the most important part of a speaker is the room. A good room can make a really bad speaker sound good, and a really bad room can make a great speaker sound horrible."

John smiled. "I wish I'd said that."

Ron affirmed that the reason he got into pure acoustics is that he figured out that if he could fix the room, he could fix most things. If he couldn't fix the room, he had very little chance of making a bad-sounding speaker sound good.

He then recommended an exercise that *Stereophile* founder J. Gordon Holt presented in the 1970s. "If you want to know how good your speaker will sound in your room, go where your speaker is and speak—one person to another person. That is the best that sound will ever be in your room because your voice is a point source coming directly from the mouth and the room has no effect on vocal production. How the room affects the sound after it leaves your mouth is the best your voice will ever sound in the room. When we approach large rooms, we always tell people, 'Just go to the stage and talk as loudly as you can to the people in the back row. If they can hear and understand you, that's the best the room will ever sound. Everything else will be downhill.'" Cheery thought.

Referencing theater acoustics, Ron said, "People assume that if you have a balcony or something out in front, that you can absorb the sound by putting absorption material on it. Nothing could be farther from the truth. The best the material can do is reduce the sound of that balcony face by about 10dB.[12] That means if there is a time delay between when someone speaks or sings and when the sound returns to them, they will hear a direct echo that will cause them not to be able to sing well unless they tune the echo out. You can determine how well speakers "sing" just by singing into a microphone, hooking it up to a 20ms delay, and then listening back through headphones.

"Small-room acoustics are different. If you are slightly out of phase, you will change the timbre of the sound, the attack, the decay, the articulation, the low-level detail, the spatiality, and more. The sound will be fuzzy."

"If you're building a small room for audiophile reproduction, you'll want a speaker that doesn't have a lot of Q," Ron said. "You also have to set everything up for the spot where you'll sit because you can't set the room up so that everybody equally enjoys good sound. Pick one or two spots where you're going to listen and make certain your first-order reflections off the sidewalls and ceiling are covered. I would recommend a spherical or a cylindrical reflector at first-order reflection points on both sidewalls and on the ceiling. That's my personal preference because I like sound that is phase correct. I want to know where the localization is—where the singer is, and where the drummer is.

"Of course, I know recording engineers who prefer it the other way around. They prefer *not* having the localization and instead opt for an enveloping sound. That's their preference."

Norm suggested that there should be a standard for audio reviewers that includes good critical-listening environments in which room modes are distributed evenly and the sound of first-order reflections is lowered. Whether this is accomplished by absorption or diffusion is less critical than keeping reverberation times linear. If you've got a system that has a resonance here, a boost there, a cancellation here, and so on, you don't have a neutral reference.

According to both men, if you want to increase absorption using 1"- or 2"-inch-thick fiberglass panels, you can double absorption by spacing multiple 2 × 2 panels on the wall rather than using a single sheet of 4 × 8. "Instead of having to buy three pieces of 4 × 8, you could buy one piece, cut it up into four 2 × 2 pieces, and get the same effect."

John said his ideal speaker setup involved having diffractive surfaces at the early reflection points and sitting close enough to ensure that direct output from the loudspeakers was at a higher level than the reverberant field. He described this as "sitting inside the critical distance." Norm described it as "reducing the specular reflection." John said he pays special attention to loudspeaker stereo-imaging capabilities and uses "mono pink noise" to ensure "a very narrow, stable image at all frequencies."

Ron may prefer direct sound with direct reflections, but both men consider it essential to understand the taste of the recording engineer because it determines how their recordings should sound. Which leads to the reason many of us devote so much time, energy, and capital to equipment and setup: We crave systems that faithfully reproduce the musical experience that recording engineers (and the artists they serve) want us to hear and feel. ■

12 Varney has attenuated ceiling reflections by 19.6dB using his FRP Ceiling Treatment.

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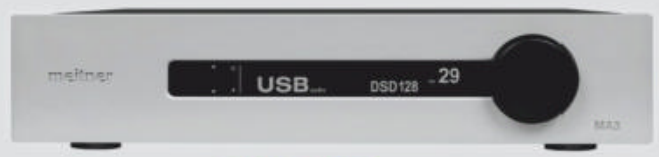


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# Genelec G Three

## ACTIVE LOUDSPEAKER

My review samples of Genelec's G Three powered loudspeaker came with a little hand-sized green and tan cardboard card featuring a poem in bold black letters dated 1898:

*At the cottage window a little bird sang.*
*And the light of the window did flicker.*
*And look. The roof up it sprang*
*and the cottage became a house bigger.*
*Look. Into a world the cottage grew*
*and the vast and wide too*
*and filled with song was the air*
*and like new was the sun's flare.*

Below this boldly printed poem, in a smaller, finer font, it said, "Thank you for choosing Genelec. With this poem by Eino Leino (the national poet of Finland) we wish you broadening horizons and new shades of sound."

I was impressed that a globally respected manufacturer of professional-grade active loudspeakers chose *not* to loudly declare their obsession with accuracy, science, and measurements, choosing instead to present a poem by a 19th century Romantic poet.

### Backstory

According to Wikipedia,[1] "Genelec Oy is a manufacturer of active loudspeaker systems based in Iisalmi, Finland. It designs and produces products especially for professional studio recording, mixing and mastering applications, broadcast, and movie production. The company was co-founded by the late Ilpo Martikainen (1947-2017) and Topi Partanen in 1978."

If you've ever been to a fancy recording studio and stood near one of Genelec's big, triamped, 469lb 1035 studio monitors, you already know that Genelec makes some *serious*, fierce-looking, military-grade monitoring speakers. They are all active.

Will Eggleston, Genelec Inc.'s self-described "chief cook and bottle washer," told me that "at the beginning of the 21st century, the popularity of home theatre in America and Asia inspired Genelec to move into the home audio market. That is when Genelec introduced the LSE-series of subwoofers and replaced most of the 2-way series, like the popular 1030 and 1031, which came in 'Pro MDF' enclosures, with the 8030, 8040, and 8050, which come in cast-aluminum enclosures designed by renowned Finnish industrial designer Harri Koskinen.[2] Since its introduction, the 8030 has been a popular choice in pro and semi-pro recording-mixing-mastering situations as well as in home environments among serious-minded audiophiles."

While the 8030 was a hybrid pro/home speaker, the G series took the next big step: It's marketed as a home speaker. I asked Will Eggleston how the G Three I'm reviewing is different from the venerable 8030.[3]

"From an electroacoustic perspective, nothing. However, the G3A had chip-based class-A/B amps. The newer G3B has class-D amps like the 8030C. The G3 has white LEDs, while the 8030C has green. G3 are available in white, black, and RAW.[4] The 8030C comes in dark gray, white, and RAW. Drivers, [crossover], and maximum SPL are the same. The tone controls are the same. The G3 has LED defeat; the 8030 does not. The G3 has a 10dB downward sensitivity adjustment; the 8030 does not. That's about it."

Genelec produces five G models; the G Three is in the middle, woofer-size, bass-response, and SPL-wise. Its RAW cast aluminum cabinet has, to my taste, a very appealing look. The G Three costs $1590/pair and is equipped with a bolted-on (but easily removed) rubber Iso-Pod base to physically isolate and angle the speaker.

This is just my second opportunity to review an active speaker. The first was KEF's little desktop LSX, which I reviewed in the April 2019 *Stereophile*. That speaker was a Wi-Fi'd, DACed, and DSPed lifestyle speaker; it was necessary to download an app just to get it running. In contrast, the active Genelec G Three is a 100% all-analog, powered two-way monitor. Its sculpted, cast-aluminum

1 See wikipedia.org/wiki/Genelec.

2 See en.wikipedia.org/wiki/Harri_Koskinen.

3 See genelec.com/g-three.

4 "RAW" is an unfinished-looking bare-aluminum finish that reminds me of the corrugated aluminum utility buildings are often made of. These speakers in RAW would look slick in a modern loft, against a wall of interior brick.**—Jim Austin**

## SPECIFICATIONS

**Description** 2-way active stand, wall, desk, or ceiling-mount monitor speaker with one 5.1" (130mm) polypropylene-cone midwoofer and one 0.75" (19mm) aluminum-dome tweeter in a cast-aluminum cabinet. Frequency response: 54Hz–20kHz, ±2.5dB. Crossover frequency: 3kHz. Amplifiers: Two 50W class-D/channel. Harmonic distortion: 50–100Hz <2%; >100Hz <0.5%. Input connections: 1 RCA, 1 XLR. Input impedance: 10k ohms (RCA and XLR). Comes with a detachable Iso-Pod base.
**Dimensions** 11 $^{25}/_{32}$" (299mm) H × 7 $^{7}/_{16}$" (189mm) W × 7" (178mm) D with Iso-Pod installed. Weight: 11lb (5kg).
**Finish** White, Black, and RAW.
**Serial numbers of units reviewed** G3BRw21119066, G3BRw21119067. Designed and manufactured in Finland.
**Price** $1590/pair. Approximate number of US dealers: Hundreds. Warranty: 5 years with product registration.
**Manufacturer** Genelec, Olvitie 5, FIN-74100, Iisalmi, Finland; Tel: +358 17 83881. Email: genelec@genelec.com. Web: genelec.com.
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body encloses a 5 ⅛" polypropylene-cone bass-mid driver and a 0.75" aluminum-dome tweeter, the latter fixed at the rear of a recessed waveguide. Each G Three is biamplified by two 50W class-D amplifiers fed by an active, line-level crossover at the G Three's input. Amps and crossovers are designed and built completely in-house.

The G Three's rear panel features a sculpted reflex port and a recessed "connector panel" with an IEC power socket plus line-level RCA and XLR inputs, with Neutrik connectors. A single G Three is small backpack-size, a bit less than 12" high, 8" wide, and 7" deep. It is knuckle-rap solid and sturdy but weighs only 11lb.

**I needed only a few tracks to realize that the G Threes play more clearly and more open than any speaker I had on hand to compare them to.**

When I clicked on "Compatible Accessories" at Genelec's website, I was amazed by how location-adaptable the G Threes are. The back of their thick cast-aluminum cabinet features four machined attachment pads for a mounting bracket, each with a pair of threaded bolt holes to accommodate a variety of stand, truss, wall, table, and ceiling mounts. Plus! You can buy a wheeled, industrial-strength Peli case designed to help world-traveling recordists pull two G Threes through airport security without hassle. For more robust engineers, Genelec offers a soft-padded carrying bag that holds two G Threes. Home-speaker status aside, for me, these options certify the G Three as a portable location monitor.

In addition to its woofer, tweeter, and biomorphic curves, the G Three's front panel features a retina-scorching white-LED power-indicator light, which mercifully, as Eggleston said, is "defeatable" via a switch on the back panel.

## MEASUREMENTS

I used DRA Labs' MLSSA system, a calibrated DPA 4006 microphone, and an Earthworks microphone preamplifier to measure the Genelec G Three's frequency response in the farfield. I used an Earthworks QTC-40 mike for the nearfield responses.

Genelec specifies the G Three's input impedance as 10k ohms. As this is an active loudspeaker, I calculated the input impedance by using spot frequency tones generated by my Audio Precision SYS2722 and examining how the nearfield sound pressure level dropped when I increased the source impedance to 600 ohms from 20 ohms (single-ended) and 40 ohms (balanced). The single-ended impedance was close to 3.6k ohms across the audioband; the balanced impedance, as expected, was twice that value. While the lowish unbalanced input impedance won't present drive difficulties with solid state sources, the bass might sound a touch lightweight with a tubed preamplifier.

With the unbalanced input fed white noise at a magnitude of 330mV, the B-weighted SPL at 1m was 85.7dB(B). Genelec specifies the maximum long-term SPL as 97dB at 1m. My sensitivity estimate implies that this would be achieved with an input signal of just below 1.2V. (The 10dB attenuator was switched off for this measurement.)

I investigated the enclosure's vibrational behavior with a plastic-tape accelerometer. It was extremely inert. The only resonant mode I found was on the sidewall, at 637Hz (fig.1), but this is vanishingly low in level, even at SPLs >90dB.

The blue trace in fig.2 shows the nearfield woofer output, the red trace that of the port on the speaker's rear. The notch at 54Hz in the woofer's output indicates that this is the port's tuning frequency. Both

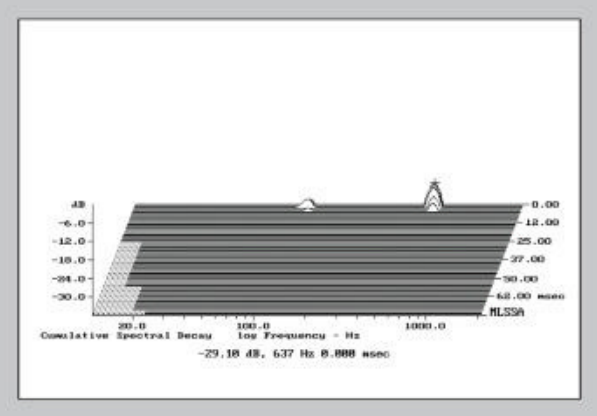


**Fig.1** Genelec G Three, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of sidewall (MLS driving voltage to speaker, 760mV; measurement bandwidth, 2kHz).

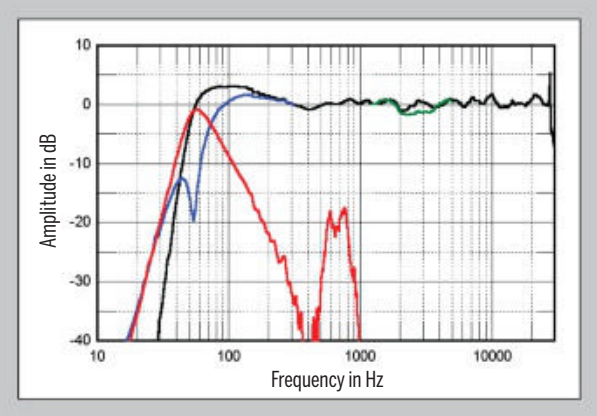


**Fig.2** Genelec G Three, anechoic response on HF axis at 50" (green) and the response 3" below that axis (black), both averaged across 30° horizontal window and corrected for microphone response, with the nearfield woofer (blue) and port (red) responses and their complex sum (black), respectively plotted below 300Hz, 950Hz, and 300Hz.

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When the G Threes are switched on, the signal-sensing Autostart function powers them up as soon as an input signal is detected. An hour after playback ceases, the G Threes go into standby mode.

## Setup

Like its G-series siblings, the Genelec G Three is designed to be used as a nearfield monitor—to be listened to at close range, where direct sound dominates sound reflected from room boundaries. When I first unpacked them, I set the G Three's EQ to "Tabletop" and listened as they sat on my 4'-wide desktop, about 3' apart and 3' away, with a wall directly behind them. In that extreme nearfield environment, they sounded clean and sharply focused down to at least 65Hz but not as transparent or 3D as they sounded when I moved them to my main system, in the same positions I put my Falcon LS3/5a Gold Badge speakers. As I experimented with placement, it occurred to me that these G Three monitors might even deliver genuine high-resolution sound while sitting on a decorator-friendly bureau top.

On the G Three's back panel is a row of DIP switches that Genelec calls "Tone Controls," which allow users to attenuate gain (–10dB) and adjust bass for "flat anechoic response" (0dB), "Free standing in a damped room" (–2dB), "Free standing in a reverberant room" (–4dB), near the listener on a table or other reflective surface (–2dB), and "In a corner" (–4dB). I experimented with the 0dB and –2dB settings, but I did most of my listening at –2dB, with the G Threes positioned on 24" stands about 11" from the wall behind them. The G Three's manual recommends pointing the speakers "directly at the listening position," which I did.

## Listening

My first impressions of Genelec's G Three remained true throughout my audition: pure and precise with a surprising amount of well-articulated bass for such a small speaker. In its tweeter region (above 3kHz), the G Threes preserved more air, atmosphere, and dimensionality than my in-house KEF LS50s, GoldenEar BRXs, or Falcon LS3/5a Gold Badges. They didn't go as low or move as much air, but, in terms of bass tone and tactility, the G Three was like a smaller, tighter version of GoldenEar's BRX standmount. In its tweeter region—above 3kHz—the G Three was distinctly more detailed than the BRX. On both sides of its 3kHz crossover region, the G Three was quieter and more seamless than my LS3/5a. I needed only a few tracks to realize that the G Threes play more clearly and more open than any speaker I had on hand to compare them to.

In my gear stories, I use the word *pure* as a term to signify that the sounds of recordings are appearing to my aural-aesthetic discriminator as unpolluted, unmitigated, and unrestrained by various intrusions like noisy cone breakup, wheezing reflex ports, a behemoth enclosure that gets in its own way, or, worst of all, an energy-absorbing, dynamics-compressing passive crossover.

**measurements, continued**

the woofer and port outputs roll off below that frequency with close to an 18dB/octave slope rather than the usual 12dB/octave slope. This implies the presence of a series capacitor in the woofer feed to limit low-frequency excursion. A couple of midrange peaks can be seen in the port's output, but these are well down in level.

The rear-panel DIP switches were set to "Flat anechoic response" for these traces. Switching the bass to "–2dB," which is how the speakers had been set up by HR, reduced the levels of the woofer and port by 2dB. The "–4dB" setting reduced the levels by another 2dB, as did setting the bass to "–6dB." The "Tabletop" switch reduced the region between 150Hz and 300Hz by 2–4dB, while the "Low Bass –4dB" switch started the low-frequency rolloff slightly higher in frequency.

The black trace below 300Hz in fig.2 shows the complex sum of the woofer and port outputs, taking into account acoustic phase and the fact that the port is mounted on the G Three's rear panel. The low-frequency rolloff is steep, and the slight peak in the midbass region is due in part to the nearfield measurement technique, which assumes that the drive-units are mounted in a true infinite baffle, ie, one that extends to infinity in both planes. The farfield response on the tweeter axis, averaged across a 30° horizontal angle (fig.2, green trace), is extraordinarily even, though there is a slight lack of energy in the presence region. Repeating the averaged response 3" below the tweeter axis (black trace) gave a flatter output in this region, the Genelec's farfield output now meeting ±1.5dB limits from 300Hz to 20kHz. (The specified listening axis is midway between the two drivers.) The sharp ultrasonic

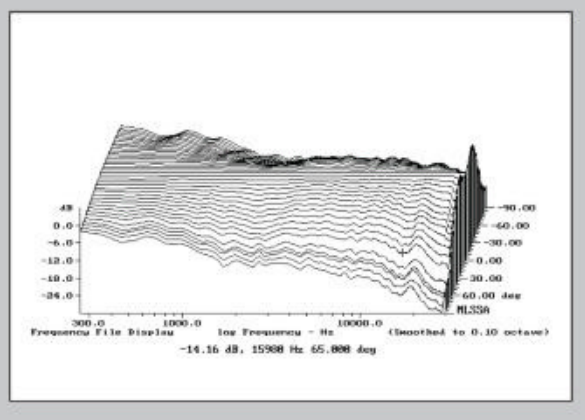

**Fig.3** Genelec G Three, lateral response family at 50", normalized to response on HF axis, from back to front: differences in response 90°–5° off axis, reference response, differences in response 5°–90° off axis.

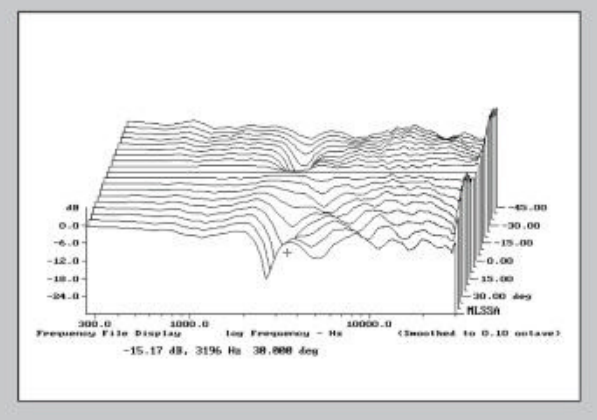

**Fig.4** Genelec G Three, vertical response family at 50", normalized to response on HF axis, from back to front: differences in response 45°–5° above axis, reference response, differences in response 5°–45° below axis.

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By driving a loudspeaker's voice-coil directly from the output of a dedicated power amplifier, a designer can avoid many of the problems that occur in passive speakers due to the impedance mismatches among the amplifier, speaker cables, and various voice-coils. Passive crossover networks employ large, expensive inductors, high-watt resistors, and fat film capacitors. By necessity, the design of passive crossovers leaves aspects of the amplifier-loudspeaker interface to chance.

Crossovers in active speakers are usually integrated just ahead (or sometimes inside) the power amplifier's circuitry and use smaller, less-expensive parts; the designer has more control over gain and EQ. Well-designed active speakers can achieve more predictable, consistent outcomes.

My ears declared that the active filters in the G Three seem more invisible—that they were doing less harm to the sound—than the crossovers in my sealed-box Falcons. All levels of dynamics, micro to macro, appeared less smeared and compressed than they do through GoldenEar's BRX, KEF's LS50, and my beloved Falcons. This dynamic clarity made recordings sound more relaxed, unhampered, and natural-flowing than through my Falcons powered by the Pass Labs XA25.

This uncompressed transparency was especially evident with Cardas's Clear Beyond cables connecting the Genelecs directly to the dCS Bartók DAC/streamer. (See my report in this month's Gramophone Dreams.) I found that the punch, power, transparency, apparent speed, and dynamic ease of the G Threes improved dramatically when I switched from Cardas's entry-level Iridium ($125 for a 1m pair) to their flagship Clear Beyond interconnects, which, at $4250 for a 1m length, cost a lot more than a pair of G Threes. The Bartók-Beyond–G Three system sounded like a complete, high-resolution, end-game audio ensemble that could give long-term pleasure to even the most discriminating audiophiles.

Fed by the Bartók, with the Clear Beyond interconnects, the G Three's natural-feeling transparency took the song "Melena," from the album *Será una Noche*, performed by La Segunda (24/96 AIFF, M•A Recordings), to a place of pure, unadulterated beauty, where I could feel the air pressurizing the recording venue. The sound on this spectacular Todd Garfinkle recording carried all the music's mesmerizing force. The magic resulting from Todd's mike placement was on full display. With the Bartók/Beyond/G Three combination, nothing felt like too much or too little. The enchanting, rhythm-enhancing echo on "Taquito Militar" seemed precisely described—not truncated, exaggerated, or smeared.

The most immediate aspect of the G Three's sound was its unspoiled clarity, which reminded me of the unobstructed view I experienced with the crossoverless, full-range EJ Jordan Marlow. In my small room, the Genelecs sounded less raw and direct but just as clear—and bigger (soundspace-wise)—than the Marlows, with more energy and solidity at the frequency extremes.

**measurements, continued**

spike at 27.6kHz is due to the metal-dome tweeter's fundamental dome resonance. These traces were taken with the "Treble –2dB" DIP switch set to Flat. Turning it on shelved down the G Three's output above 7kHz, reaching –2dB at 15kHz.

The G Three's horizontal dispersion, normalized to the response on the tweeter axis, which thus appears as a straight line, is shown in fig.3. The contour lines in this graph are evenly spaced, with the radiation pattern smoothly narrowing in the treble. This is textbook behavior. Fig.4 shows the speaker's dispersion in the vertical plane. A suckout appears at 3.2kHz, the frequency of the crossover between the tweeter and woofer, 5° above and more than 10° below the HF axis. This graph confirms that, as shown in fig.2, the flattest treble response is obtained 3" below this axis.

In the time domain, the G Three's step response (fig.5) indicates that the tweeter's output arrives first at the microphone and is connected in negative acoustic polarity. The woofer is connected in positive polarity. The decay of the tweeter's step blends smoothly with the start of the woofers' step, implying optimal crossover implementation. The G Three's cumulative spectral-decay plot on the tweeter axis (fig.6) is superbly clean, the only significant ridge of delayed energy occurring at the tweeter's dome-resonance frequency. (As always in my CSD graphs, ignore the ridge just below 16kHz, which is due to interference from the test computer's video circuitry.)

The Genelec G Three offers superb measured performance, and the versatility of its tone controls will allow that performance to be optimized for specific locations.

**—John Atkinson**

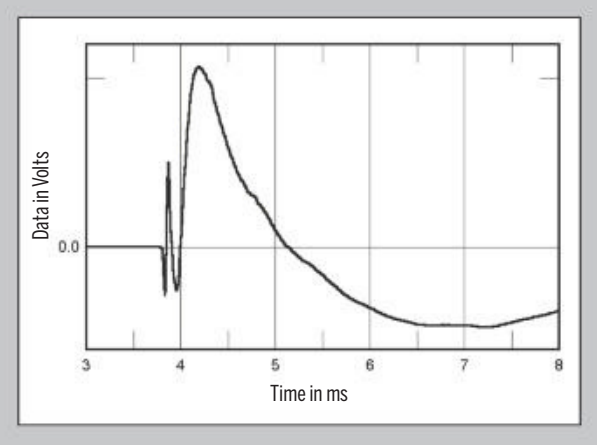


**Fig.5** Genelec G Three, step response on HF axis at 50" (5ms time window, 30kHz bandwidth).

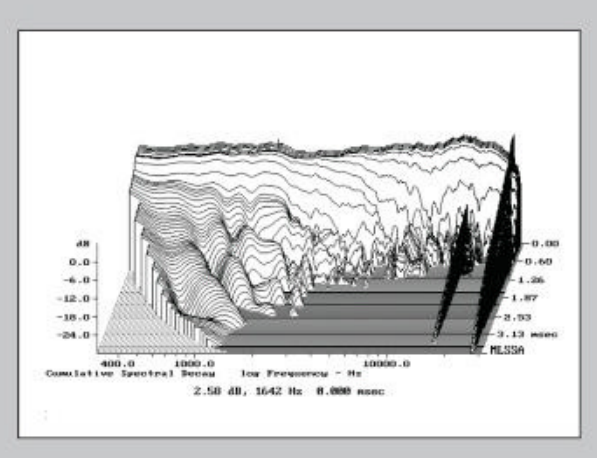


**Fig.6** Genelec G Three, cumulative spectral-decay plot on HF axis at 50" (0.15ms risetime).

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### When I returned to the LS3/5a

I'd been quite happily playing everything through the G Threes for about three weeks when a *Stereophile* reader named Aaron Garret recommended the album *Air* from a London-based group called Sault, which is led by Great Britain's Producer of the Year, Dean Josiah Cover, who also goes by Inflo (16/44.1 FLAC, Forever Living Originals/Qobuz). I had never heard of Sault, or Inflo, but I immediately fell for *Air*'s edgy, noisy, choir-and-sound-collage unpredictability. Even more, I enjoyed Sault's melodramatic, Hollywood-esque film-score ironies and the way the album used strange, contrasting sounds to confront and challenge me.

When I played *Air*'s first several tracks through the Genelec G Threes, the volumes of air around vocals and synthesizer seemed excessively dense and closed in. I wasn't sure whether this thick mechanical texture I was noticing was an aspect of the recording or an artifact of the G Threes.

Soon, though, it became clear that I was hearing fake reverb-glue, which infused the whole recording. The various layered tracks (most featuring synthesizers) and heavily compressed movie-score orchestrations, set behind the equally compressed voices of the Music Confectionery choir, cried out for air and dimensionality. Alas, there was no air in *Air*; the album couldn't breathe. This music is good, but these Genelec G Threes did nothing to disguise Inflo's suffocating, effects-heavy production.

When I played this odd-sounding album through my Falcon Gold Badges, powered by Pass Labs' XA25, the sound opened up—a little. The tones of everything became slightly drier but also more saturated. The Falcons made this album more enjoyable. Some bit of *Air*'s unsupple density was either exaggerated by or more clearly revealed by the Genelecs.

As I compared more albums through the G Threes and Falcons, though, it became apparent that the Genelecs emphasized detail more than the similar-sized LS3/5a's. With the G Threes, I could hear more of the nuts and bolts of album mixes. That extra insightfulness was one of the G Three's defining characteristics. Who *doesn't* like beauty *and* resolution, together?

There was one other time that the G Threes sounded different than I reasoned they should. I was listening to Cheng Gong Liang play "Melody of Contemplation" on *Guqin* (16/44.1 FLAC Wind Music/Tidal). This album, which I know very well, was recorded by master recordist Kavichandran Alexander. Through the G Threes, it was moister and rounder and less precisely defined than with my Falcons, which play it with more transient bite, more clearly defined form, and stronger pluck. I have no explanation for this apparent inconsistency.

When I strained to listen critically, I noticed only one shortfall with the Genelecs, and it was minor. To my ears, the G Three's presentation was slightly ethereal—less *of the Earth*—than the more corporeal Falcon LS3/5a Gold Badges. Maybe the Genelec's cast-aluminum enclosure made me miss the flavor of the Brit speaker's wood box? I suspect the G Three's metal cabinet contributed more than a little to my impression of purity in its sound.

Sequence is everything. Each time I switched from the five-times-more-expensive Falcon/XA25 combo to the active Genelecs, on every recording I played I noticed the beauty of the G Threes' clear-lens resolve and their conspicuous purity. When I switched from the Genelecs to the Falcons, I noticed their surprising weight and natural tone.

### Audiophile for life

Being an audiophile for life has been an odyssey of self-discovery, learning where to direct my listening attentions, what to care about, what to admire. I've learned to be a fan of audio companies that have stood the test of time; whose products have become esteemed classics by delivering high levels of long-term musical engagement, whose attitudes and engineering viewpoints reflect my values, and whose house sound feels insightful and true to the arts of music and recording. It's partially a style thing, but I've always been attracted to products with a recording studio/movie theater pedigree that looked sturdy and performed in an unfussy, professional manner. To my taste, too many of today's home hi-fi components are often too fluffy and bourgeois-looking, too much about ersatz "hi-fi" sound and glitzy trophy-product styling—all the more reason to appreciate affordable, professional-looking gear like the Genelec G Three.

I've long railed against speakers that need to be placed far away from room boundaries so that they can be listened to in some Eames-chair sweet spot even farther into the room. Consequently, I am a life-long advocate of nearfield listening and small, nearfield-monitor–type speakers. In this respect, too, the G Three matches my values.

I doubt you'll be surprised when I tell you I am over-the-moon crazy about Genelec's G Three minimonitor. It rendered recordings in a manner that really suits my listening proclivities.

### And filled with song was the air

Genelec's G Three transduces more unpolluted truth than any other small speaker I've auditioned. Its unique purity is mesmerizing, a pleasure to hear. In my room, with my sources and preamp and wires, the G Three performs like an authentic studio monitor, providing copious detail without losing any of music's beauty or poetic content. My highest recommendation. ■

## ASSOCIATED EQUIPMENT

**Analog sources** Dr. Feickert Analogue Blackbird turntable with Schick 10.5" tonearm, Koetsu Rosewood Signature Platinum, My Sonic Lab Ultra Eminent Ex, Zu-Denon DL-103 moving coil cartridges; Music Hall Stealth turntable with Ortofon 2M Blue and 2M Black, Audio-Technica VM95E moving magnet cartridges.
**Digital sources** Roon Nucleus+ music server; HoloAudio Spring 3 D/A processor; dCS Bartók DAC/Streamer, Denafrips Terminator Plus DAC.
**Preamplification** HoloAudio Serene line-level pre; EMIA, Koetsu, and Lundahl LL1931Ag step-up transformers, Sutherland Engineering Little Loco transimpedance phono preamplifier, Tavish Design Adagio tube phono stage.
**Power amplifiers** Pass Labs XA25.
**Loudspeakers** KEF LS50, Falcon Acoustic LS3/5a Gold Badge, GoldenEar BRX.
**Cables** Digital: AudioQuest Diamond, Cardas Clear. Interconnect: Black Cat Coppertone, Cardas Clear Cygnus, Cardas Clear Beyond, Cardas Iridium, AudioQuest ThunderBird, Triode Wire Labs Spirit II. Speaker: Triode Wire Labs American Series, Auditorium 23, Cardas Clear Beyond. AC: AudioQuest Tornado, manufacturer's own.
**Accessories** AudioQuest Niagara 1000 power conditioner; Harmonic Resolution Systems M3X-1719-AMG GR LF isolation platform; Platis 65 Passive Isolation Platform (under Dr. Feickert turntable), Audiophile Systems platform (under Music Hall turntable), Sound Anchor Reference speaker stands.—**Herb Reichert**

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KALMAN RUBINSON

# Marantz Model 40n

## NETWORK INTEGRATED AMPLIFIER

On a cold, clear February morning, I attended my first in-person press event since the beginning of the pandemic. Marantz had invited me to a small group session in a suite at the Equinox Hotel at Hudson Yards but gave no indication of what was in store. After two years without live press events or audio shows, I was not going to spurn the offer no matter what would be presented: I was hungry for hi-fi. Upon arrival, I learned that Marantz would be featuring just one new product, a streaming integrated amplifier, the Marantz Model 40n ($2499). Sure, I'm in.

A short introduction linked present-day Marantz to seminal Marantz products from the 1950s, represented visually by the distinc-

### SPECIFICATIONS

**Description** Remote-controlled, network-connected D/A integrated amplifier. Analog inputs: 5 pair RCA (CD, line, phono, recorder, power amp direct). Digital inputs: TosLink, coaxial S/PDIF, HDMI/ARC, USB-A. Network inputs: Bluetooth, Ethernet (RJ45), Wi-Fi. Supported file formats: MP3, AAC, WMA, ALAC, FLAC, WAV. Supported sample rates: up to 192kHz PCM (digital inputs), up to 192kHz PCM and 5.6MHz DSD (USB, Network). Supported streaming services: Pandora, Spotify, Amazon Music, Tidal, Deezer, HighResAudio, Juke, Napster, SoundCloud, TuneIn. Analog outputs: 1 pair RCA (recorder), 1 mono RCA subwoofer, 1/4" headphone jack, 2 pair speaker binding posts, RC-5 control input and output. Continuous output power: 70Wpc into 8 ohms (18.45dBW), 100Wpc into 4 ohms (17dBW). Damping factor: >100 (ref. 8 ohms, 20Hz–20kHz). Frequency response (CD input): 5Hz–100kHz, ±3dB @1W into 8 ohms. Signal/noise (IHF-A, 8 ohms): 87dB (phono), 113dB (CD, line, recorder), 125dB (power amp in). THD: <0.02% (20Hz–20kHz, both channels driven into 8 ohms. Power consumption: 220W, <0.3W standby.
**Dimensions** 17.4" (442mm) W × 5.1" (129.5mm) H × 17" (432mm) D. Weight: 36.8lb (16.7kg).
**Finishes** Black, Silver/Gold.
**Serial number of unit reviewed** MBPX012200103. HEOS version 3.8.13. "Made in Japan."
**Price** $2499. Approximate number of US dealers: 700. Warranty: 3 years, parts & labor.
**Manufacturer**
5541 Fermi Ct.
Carlsbad, CA 92008
Tel: (800) 654-6633.
Web: Marantz.com.

tive Marantz center "porthole," first seen facing forward on the Model 9 amplifier and now embraced as the company's core design motif. That porthole was originally a bias meter; today it contains an alphanumeric display.[1]

The Model 40n was the solo star of the show, so several units were set up *en suite*. One was set between a pair of floorstanding speakers next to a turntable and below a large video display. During the demo, it played digital and analog music as well as video sound fed to it via HDMI-ARC. Another unit was set on a bookshelf, bookended by a pair of small speakers playing music stored locally, guided by the HEOS app. A third sample was tucked into a cabinet in the dining room, playing music from web radio and Spotify (via Spotify Connect).

**The frequency balance was neutral, with tight, clean bass, an open-sounding midrange, and an extended but unstressed treble.**

However strong and important the link between the Model 40n and legacy Marantz products, the 40n is not your Grandpa Saul's integrated amplifier. It's a multifunction device that does phono, digital, and streaming and utilizes a tablet/smartphone app. Indeed, when I installed the review sample, I found the eight-page quick-start guide adequate *only* for the simplest quick start. The 113-page owner's manual, available for download on Marantz's website, proved essential to making full use of this multitalented integrated.

1 For me, the horizontal tier of physical knobs—volume, balance, bass and treble controls, and input-source selector—is a more palpable, visual, and functional link to the company's aesthetic past.

## MEASUREMENTS

I measured the Marantz Model 40n with my Audio Precision SYS2722 system.[1] For the digital-input measurements, I used TosLink data and the HEOS app on my iPhone to play back test-tone WAV files on a USB stick plugged into the rear-panel port.

The Marantz's single-ended line inputs preserved absolute polarity at both the loudspeaker and headphone outputs. The volume control operated in accurate 0.5dB steps, and the maximum gain was 40.6dB at the loudspeaker outputs and 40.7dB at the headphone output. The power amplifier stage offered a fixed gain of 24dB. The input impedance at both the line inputs and the power amplifier inputs was 15k ohms at all audio frequencies.

The Model 40n's output impedance at the headphone output was a relatively high 320 ohms. The loudspeaker output impedance, including the series impedance of 6' of spaced-pair cable, was 0.1 ohm at 20Hz and 1kHz, increasing slightly to 0.12 ohm at 20kHz. The small-signal bandwidth was extremely wide, the response into 8 ohms (fig.1, blue and red traces) down less than 3dB at 200kHz. Into 2 ohms (green trace), the output was –3dB at 100kHz. Frequency-response variations into our simulated loudspeaker load (gray trace) were negligible.[2] This graph was taken with the volume control set to its maximum ("100"); the excellent channel matching was preserved at lower settings of the control. The extended ultrasonic response meant that the Marantz's reproduction of a 10kHz squarewave featured very short rise-times (fig.2). Commendably, no overshoot or ringing was visible. The bass and treble controls offered a maximum boost and cut of close to 10dB (fig.3).

Channel separation was excellent, at 90dB in both directions below 3kHz and still close to 80dB at 20kHz. With the line inputs shorted to ground and the volume

1 See stereophile.com/content/measurements-maps-precision.

2 See stereophile.com/content/real-life-measurements-page-2.

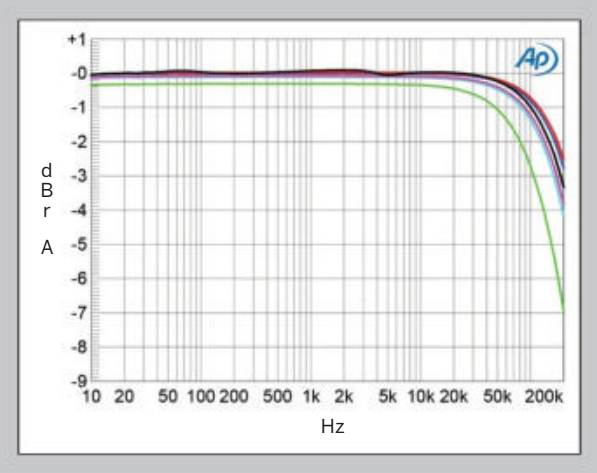


**Fig.1** Marantz Model 40n, volume control set to "100," frequency response at 2.83V into: simulated loudspeaker load (gray), 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta), 2 ohms (green) (1dB/vertical div.).

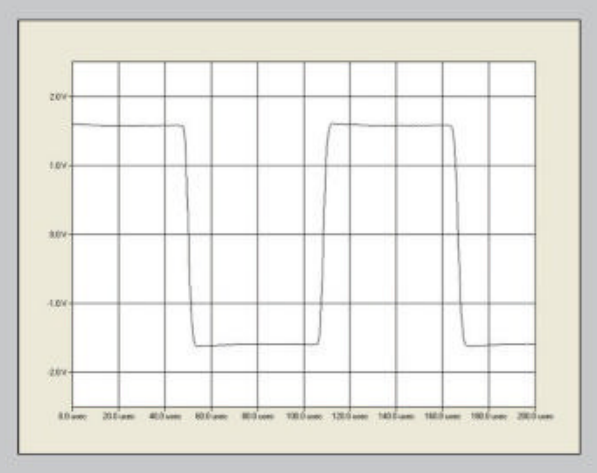

**Fig.2** Marantz Model 40n, small-signal 10kHz squarewave into 8 ohms.

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## Unboxing

The Marantz Model 40n comes out of the box as a slab, not unlike its all-analog predecessors. The front panel has a subtly undulating relief pattern and accommodates a small power pushbutton on the left and a ¼" headphone jack on the right. Between, a smooth, wide escutcheon carries the signature porthole above that iconic row of six control knobs. The escutcheon stands just proud of the front panel and in low light appears to float thanks to two banks of adjustable LEDs hidden behind its flanks.

The porthole display is clear and bright, but terse. By default, it shows only the selected input source and the volume setting. It also displays the menu choices when you're adjusting the settings. The 40n has two major functional sections. The first, a pure-analog integrated amplifier, harkens back to Marantz's past with two channels of class-AB power, a phono stage, and an analog preamplifier with analog inputs (including phono and an input from a separate preamplifier, all on RCA) and physical controls. The second is a capable network DAC/streamer with digital controls. Not that you'd notice two sections: Integration between the analog and digital operations is seamless.

The six control knobs are arranged in the classic array. On the left and right are slightly larger knobs for input selection and volume control, respectively. In between are source direct, bass, treble, and balance (left to right). The source-direct option, as its name suggests, bypasses the control circuits for bass, treble, and balance adjustment. There are no permanent labels on the input selector, but it steps through the input choices sequentially, showing the label for the choice currently selected on the display. The remote control supports direct input selection, volume control, and access to settings but not bass, treble, or balance adjustment.

Menu-based setup can be achieved with either the remote control, a smartphone, or a tablet. The settings menu is simple, with



control set to its maximum, the Model 40n's unweighted, wideband signal/noise ratio was a good 71.7dB ref. 2.83V into 8 ohms (average of both channels). This ratio improved to 82dB when the measurement bandwidth was restricted to the audioband and to 84.7dB when A-weighted. While spuriae at the supply frequency of 60Hz and its harmonics were present in the amplifier's output (fig.4), their levels were all very low, even with the volume control set to its maximum.

Marantz specifies the Model 40n's maximum power as 70Wpc into 8 ohms (18.45dBW) and 100Wpc into 4 ohms (17dBW). We specify clipping power as when the THD+noise reaches 1%. By that measure, and with both channels driven, the Marantz amplifier exceeded its specified powers, clipping at 74Wpc into 8 ohms (fig.5, 18.7dBW) and 120Wpc into 4 ohms (fig.6, 17.8dBW). I didn't test clipping power into 2 ohms, as the amplifier isn't specified into that load. (A notice on the rear panel says "Impedance: 4–16 ohms.")

The distortion lies below the noisefloor at powers below a few tens of watts, so I examined how the THD+N varied with frequency at 20V, which is equivalent to 50W into 8 ohms and 100W into 4 ohms (fig.7). The distortion is very similar into both 8 ohms (blue and red traces) and 4 ohms (cyan and magenta traces), and while there

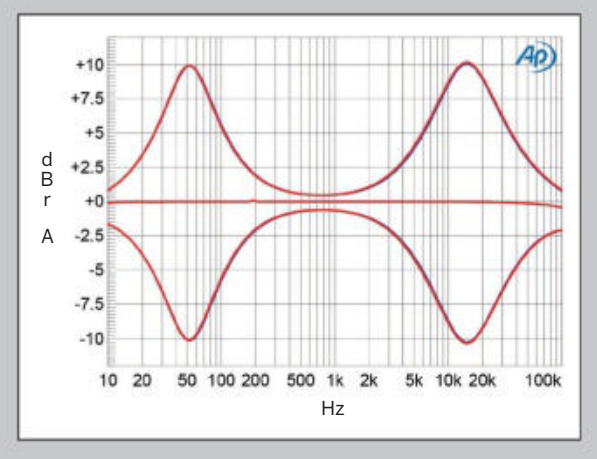


**Fig.3** Marantz Model 40n, frequency response at 2.83V into 8 ohms with treble and bass controls turned off and set to maximum and minimum (left channel blue, right red, 2dB/vertical div.).

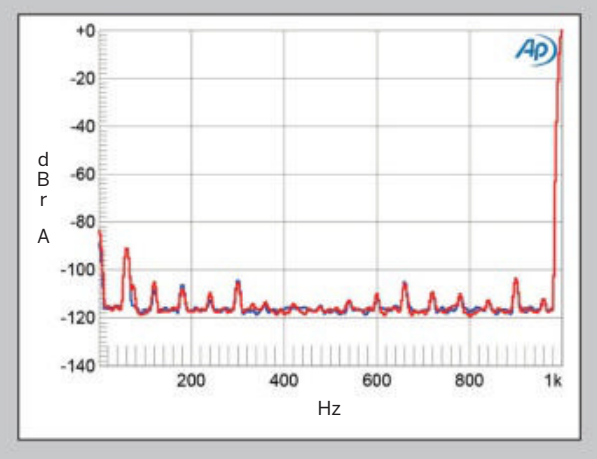


**Fig.4** Marantz Model 40n, spectrum of 1kHz sinewave, DC–1kHz, at 1Wpc into 8 ohms, volume control set to "100" (left channel magenta, right red; linear frequency scale).

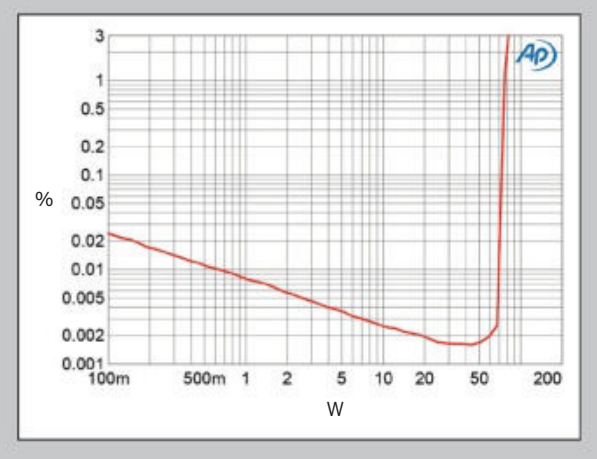


**Fig.5** Marantz Model 40n, distortion (%) vs 1kHz continuous output power into 8 ohms.

KLH

MODEL COLLECTION

# The New Shape Of Sound.

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KLH is proud to introduce the highly-anticipated Model Three acoustic suspension loudspeaker system! Second in line in this collection, the KLH Model Three is a compact system that rivals the largest floor-standing speakers. This mid-century modern masterpiece, available in genuine English Walnut and West African Mahogany veneers, reflects the iconic styling unique to the KLH brand with its charming aesthetic and big, notable personality. The Model Three's two-way design continues the KLH acoustic suspension legacy of accurate audiophile-quality performance while providing the perfect soundstage solution for music enthusiasts with smaller listening spaces. Built on the acoustic suspension design principles made famous by KLH founder Henry Kloss, the KLH Model Three delivers a familial acoustic signature and musical integrity to its elder, the KLH Model Five. KLH's Chief Engineer, Kerry Geist, designed the new Model Three using modern-day advanced technology, the finest materials, and artisan craftsmanship to achieve the unimaginable: jaw-dropping low-bass extension, surprising mid-bass detail, and high-frequency accuracy, all from a beautiful small enclosure. Audiophiles, do not let the size fool you. Whether your room is large or small, the music delivered from the Model Three will command your attention and connect you to the sound. KLH is back, again, bringing you the new shape of sound.

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just four menu categories: Audio, to select a reconstruction filter for the DAC, to set up a low-pass filter for connecting a subwoofer, and to set a streaming lock range[2] and volume limit; TV, to select which audio input the television is using, to set up the autoplay option so that the 40n automatically starts up when that input receives a signal, and HDMI power control, to switch to standby when TV audio is discontinued; General, to set LED brightness and auto-standby (which puts the amp in standby when no audio input is detected) and to reset the device; and Network, to turn off various network components (including Bluetooth) if they are not being used.

Two pairs of the best multiway speaker terminals I have seen in a while are the most prominent features of the Model 40n's back panel, with robust metal rings that are comfortable to grasp and easy to secure. Side access enables bare-wire and spade connection, but a clear collar protects the rest of the post from stray wisps of wire. To the right of the speaker connectors is a two-conductor AC inlet, a Wi-Fi antenna receptacle, and a tiny reset button.

On the top left of the back panel is a tier

2 By limiting the lock range, you can lower jitter, perhaps improving sound a little. However, too narrow a range can result in intermittent playback.

**measurements, continued**

is a slight increase in the top two audio octaves, the distortion is extremely low.

The distortion waveform at this output voltage was dominated by random noise, even when I averaged 32 readings (fig.8). Spectral analysis (fig.9) indicated that the second harmonic was the highest in level into 8 ohms, but at –103dB (0.0007%), this is negligible. At the same voltage into 4 ohms (not shown), the third harmonic was now the highest in level but at close to –100dB (0.001%) is still negligible. Tested with an equal mix of 19 and 20kHz tones at 100W peak into 4 ohms, the intermodulation distortion products all lay at or below –90dB (fig.10).

Turning to the Marantz Model 40n's digital-input performance, the optical and coaxial S/PDIF inputs locked to data sampled at up to 192kHz. The Marantz's digital inputs all preserved absolute polarity. With the volume control set to its maximum, a 1kHz digital signal at –40dBFS resulted in a level at both the loudspeaker and headphone outputs of 2.2V. This implies that the D/A circuit has close to 20dB of excess gain. Data at 0dBFS would drive the amplifier into clipping unless the volume control was set to –20dB ("60" on the front-panel display). I used this volume control setting for the digital input measurements, and to avoid damaging the power amplifier stage with high-level digital data, I examined the digital inputs' behavior at the headphone output, which mutes the loudspeaker outputs.

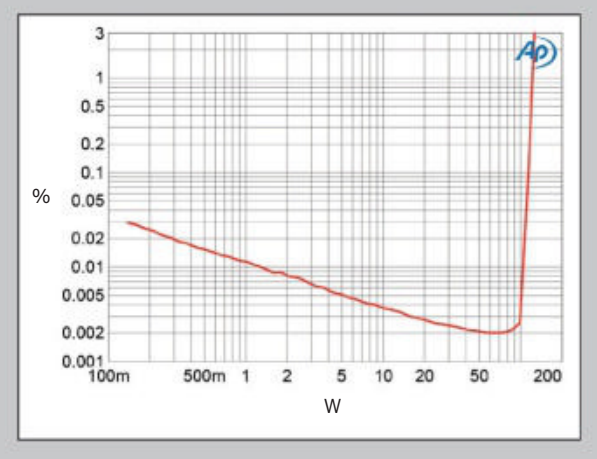


**Fig.6** Marantz Model 40n, distortion (%) vs 1kHz continuous output power into 4 ohms.

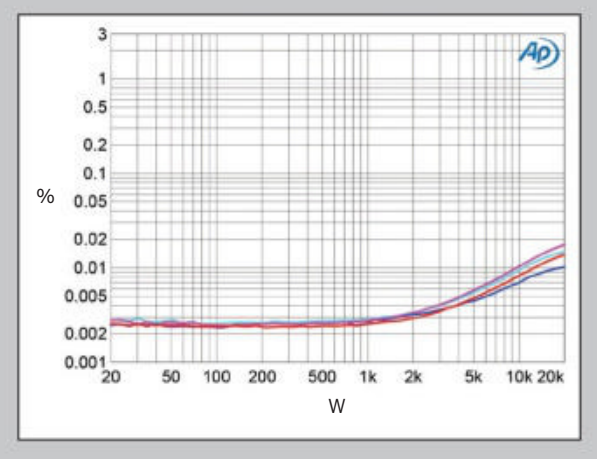


**Fig.7** Marantz Model 40n, THD+N (%) vs frequency at 20V into 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta).

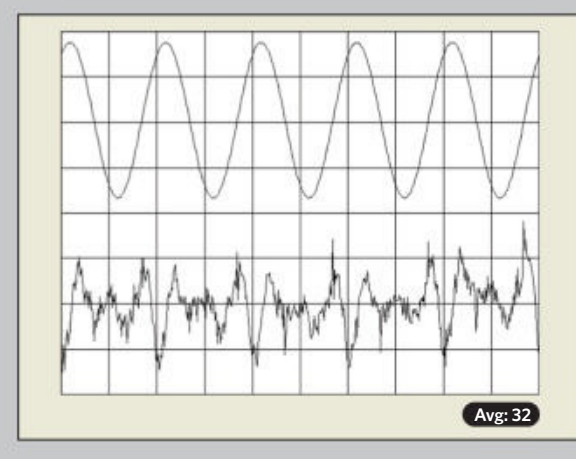


**Fig.8** Marantz Model 40n, 1kHz waveform at 50W into 8 ohms, 0.0066% THD+N (top); distortion and noise waveform with fundamental notched out (bottom, not to scale).

of digital connections, starting with a receptacle for a second Wi-Fi antenna. To its right are a USB port, an RJ45 network connector, an HDMI-ARC (Audio Return Channel) connector, and coax and TosLink S/PDIF ports. Below the row of digital inputs is an RCA phono input pair and ground terminal. An array of RCA jacks is underneath: L/R line-level pairs labeled CD, Line, and Recorder, then outputs labeled Recorder and Subwoofer (this last with a single RCA) and a preamp input (labeled Power Amp In, for the small number of people who will use the 40n as just a power amplifier). Rightmost in this array is an input/output pair for establishing a remote control–sharing link with a compatible device, such as a Marantz CD player.

I connected my LAN cable to the RJ45 connector (always preferable to Wi-Fi for music playback) and a pair of Cardas Cross cables on temporary duty away from my subwoofers, to the line inputs; their other ends connected to my Oppo disc player. I connected a 2TB portable hard drive to the USB port for direct library access. The banana plugs of my Blue Jeans speaker cables fit firmly into the 40n's speaker terminals. I downloaded and installed the HEOS app on my iPhone, then installed the Spotify and Qobuz apps there and on my Win11 PC streamer. With the network input selected, the 40n was instantly recognized by all but Qobuz's Windows app. I could still play music from Qobuz, though, because the 40n was recognized by Roon and JRiver.

Over the course of a few weeks, I tried every playback option[3] the Model 40n affords, except for the phono input. Everything worked well, at least to the limits of the technologies and of my ability to discern playback nuance. I would like to see a readout of bit rate and sampling frequency, but experimentation confirmed playback with HEOS from both NAS and local files at up to 192kHz PCM and 5.6MHz DSD. Likewise with JRiver.

While the Model 40n is said to be in the process of being certified by Roon,[4] it doesn't implement Roon's RAAT protocol. So, over the network, the Roon core connects to the 40n via AirPlay (yes, even with a wired connection). This means that Roon playback (including Qobuz playback via Roon) is limited to 16/44.1

3 I briefly tested the functionality of the HDMI-ARC input to confirm its usability but did not spend enough time with it to comment on the sound. It is hard to imagine that its performance would differ from that with other digital inputs.

4 The Marantz 30n SACD/CD player is already Roon Tested.

**measurements, continued**

The Marantz amplifier offers a choice of two reconstruction filters, referred to as F1 and F2. F1's impulse response with 44.1kHz data (fig.11) is typical of a very short linear-phase filter, with just one cycle of ringing on either side of the single sample at 0dBFS. F2's impulse response (fig.12) has ringing on both sides of the single high sample, but with considerably more ringing after than before. This impulse response is identical to the "hybrid" filter offered by ESS DAC chips.[3] With 44.1kHz-sampled white noise (fig.13, red and magenta traces), the F1 filter's response rolled off slowly above 20kHz, not reaching full stopband suppression until 37kHz, well above half the sample rate (vertical green line). The aliased image at 25kHz of a 19.1kHz tone at 0dBFS (blue and cyan traces) is suppressed by just 12dB, therefore, but the distortion harmonics of the 19.1kHz tone are all very low in level. Repeating this analysis with the F2 filter (fig.14), the ultrasonic rolloff was much faster, resulting in considerably greater suppression of the aliased image at 25kHz. However, there is an odd boost in the noisefloor above 65kHz.

With F1 active and 44.1kHz data (fig.15, green and gray traces), the digital-input frequency response rolled off gently above 12kHz, reaching –3dB at 20kHz. The levels of the two channels were perfectly matched. With 96kHz (cyan, magenta) and 192kHz (blue, red) data, the audioband output was flat, with then a gentle rolloff starting below half of each sample rate. With the F2 filter (not shown), the audioband response was flat, with then a sharp rolloff

3 See, for example, fig.1 at stereophile.com/content/questyle-audio-m12-portable-usb-da-headphone-amplifier-measurements.

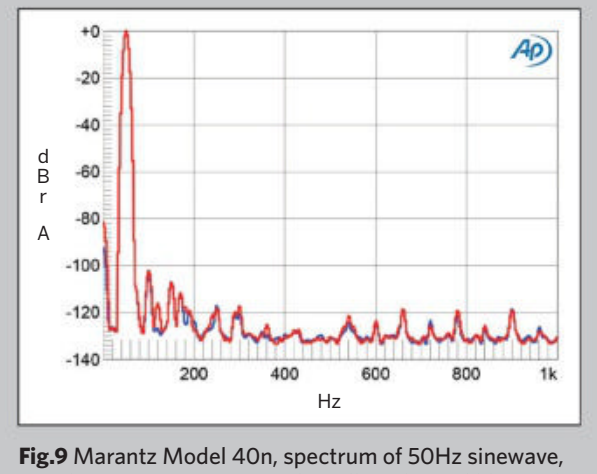


**Fig.9** Marantz Model 40n, spectrum of 50Hz sinewave, DC–1kHz, at 50Wpc into 8 ohms (left channel blue, right red; linear frequency scale).

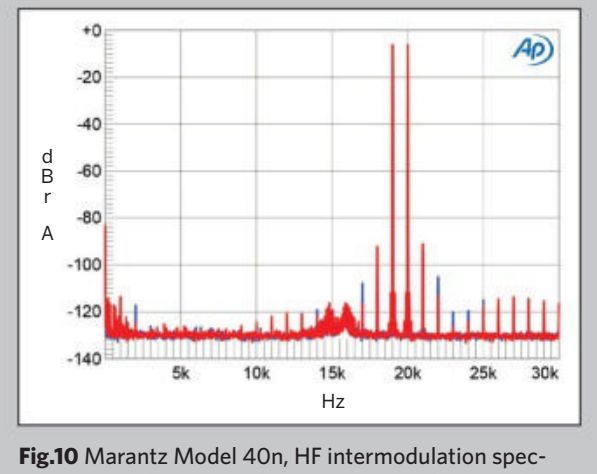


**Fig.10** Marantz Model 40n, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 100W peak into 4 ohms (left channel blue, right red; linear frequency scale).

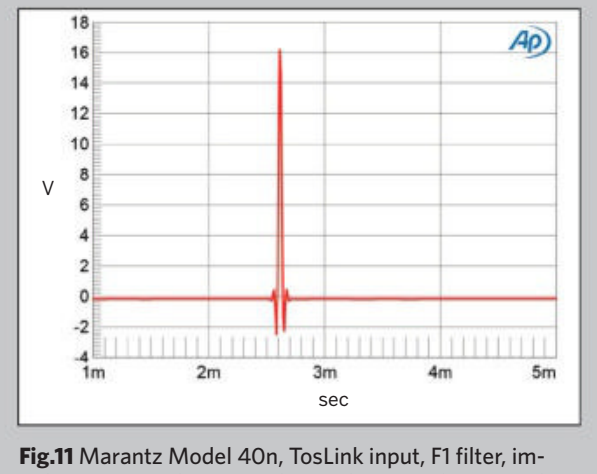


**Fig.11** Marantz Model 40n, TosLink input, F1 filter, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

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stereo. When used as a streamer, the 40n is at its best with the excellent HEOS app, its intended network implementation. That said, the Qobuz app on my iPhone also recognized the 40n and streamed to it at up to 24/192. SpotifyConnect was responsive and sounded good, but I could not confirm bit rates since neither Spotify's iPhone app nor its desktop app (nor the Marantz) provide this information.

## Sound

I began with HEOS and selected the connected USB drive as source so that I could jump right in with some familiar music. The far ends of my speaker cables were already connected to a newly arrived pair of KEF Blade Two Meta speakers, which are up next for review. What came out of the KEF was really nice but, since I had yet to get a firm impression of these speakers, it was hard to draw any conclusions about what the Marantz was contributing. Instead of moving my regular Revel Studio2s into the firing line, I decided that the fairest way to audition the $2500 Marantz would be with the Revel Performa3 F206s, which normally handle the surround-channel duties. With an MSRP of $4000/pair, these small, real-world floorstanders are an appropriate match with the Model 40n.

Immediately, an impression of rightness emerged from this combination. The frequency balance was neutral, with tight, clean bass, an open-sounding midrange, and an extended, unstressed treble. I turned to an old favorite, *Bluesiana Triangle* (FLAC rip from CD, Windham Hill WD-0125), with Art Blakey (drums), Dr. John (keyboards, guitar, vocals), and David "Fathead" Newman (saxophone, flute). Driven by Blakey's tight, grooving beat and Newman's ornamental commentary, Dr. John plays familiar tunes in unfamiliar ways. Voices were distinct and intimate, as they would sound in a small club (or a living room, for that matter). Reveling in the sound of this little system, I played it a little louder than I normally do, but the 40n drove the speakers cleanly at all reasonable SPLs (and unreasonable ones, too, when I ineptly switched among inputs and apps without anticipating their different signal levels).

**measurements, continued**

just below half of each sample rate.

I examined the resolution of the Model 40n's digital inputs by looking at the spectrum at the headphone output with a dithered 1kHz tone at –90dBFS with 16- and 24-bit data (fig.16). The noisefloor dropped by 15dB with 24-bit data, which implies that the Marantz offers between 18 and 19 bits of resolution. However, this graph was taken with the volume control set to –20dB. To examine the ultimate resolution, I repeated the 24-bit analysis with the volume control set to its maximum. The noisefloor dropped by another 6dB, but the improved resolution will be academic given the digital input's gain architecture. The waveform of a tone at exactly –90.31dBFS with undithered 16-bit data was reproduced with the three DC voltage levels described by the data unobscured by noise (not shown). With undithered 24-bit data (also not shown), the result was a relatively clean sinewave.

Intermodulation distortion via the Marantz amplifier's digital inputs with F1 active (fig.17) was very low in both channels. While the ultrasonic aliased images of the tones are suppressed by just 10–12dB, the higher-order audioband images all lie close to –120dB. With F2, the difference product at 1kHz lay at just –114dB (0.0002%, not shown).

I tested the Model 40n for its rejection of word-clock jitter via its TosLink input using 16- and 24-bit J-Test data sampled at 44.1kHz. Other than those closest to the frequency of the tone at one-quarter

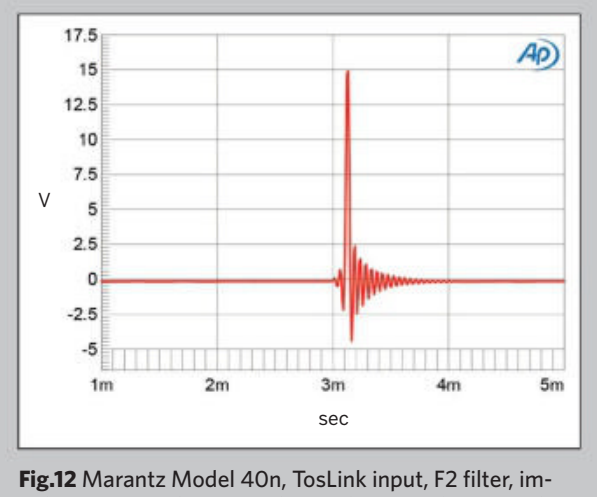


**Fig.12** Marantz Model 40n, TosLink input, F2 filter, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

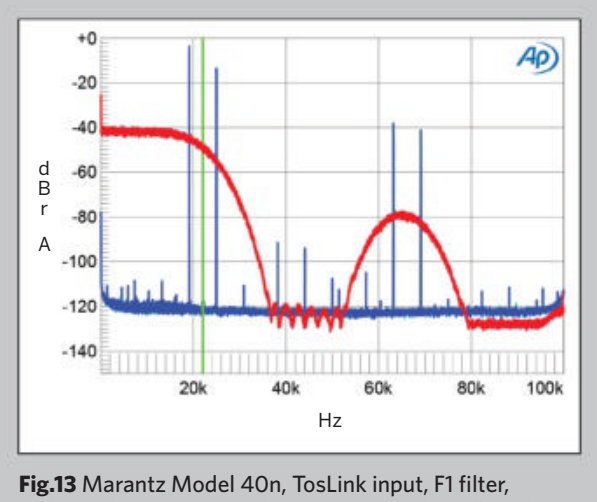


**Fig.13** Marantz Model 40n, TosLink input, F1 filter, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with data sampled at 44.1kHz (20dB/vertical div.).

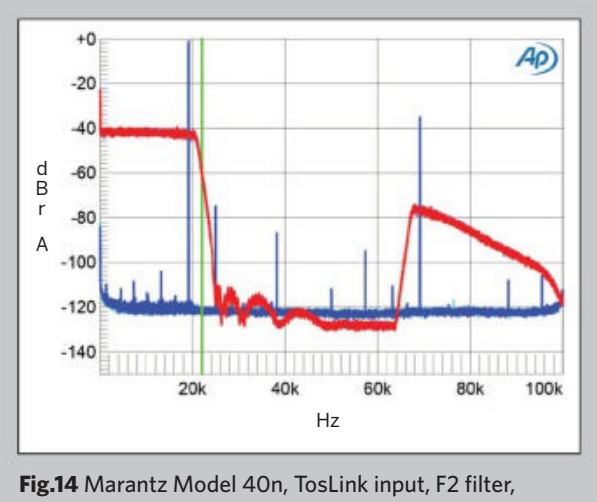


**Fig.14** Marantz Model 40n, TosLink input, F2 filter, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with data sampled at 44.1kHz (20dB/vertical div.).

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If anyone were to find anything amiss with the sound of the 40n–F206 combination, it would likely be someone who likes more oomph in the bass. I got my bass kicks by connecting an SVS SB-3000 Pro sub to the subwoofer output of the 40n. This worked fine, although it would be good to have a high-pass filter for the L and R channels, for even better integration between mains and sub.

The small, floorstanding F206s roll off below 40Hz (Revel specs them at –3dB at 42Hz and –6dB at 36Hz). I set the 40n's subwoofer-output filter to 40Hz and the SB-3000's level to –20dB[5]; the sub's presence was undetectable on most program material, but when called on to do so, it extended the bass and endowed it with massive power. At about 3:30 into track 6 of *Bluesiana Triangle*, Newman sits down while the others just groove on a simple motif for about a minute and a half. But here, the tables are turned: Dr. John's guitar drives the beat as Blakey riffs. With the added sub, the guitar was deep and strong and the percussion, from cymbal to kickdrum, had real impact. It was hypnotic.

The Marantz Model 40n was a great match to the Revel F206 in price, power, and music reproduction. This whet my appetite to push the pair harder. I chose sections from two iconic works of the classical romantic repertoire: Mahler's Symphony No.8 (opening) and Berlioz's *Requiem*'s *Tuba Mirum*: complex, massive compositions. I selected two recent, uncannily clear recordings: Thierry Fischer's Mahler Symphony No.8 with the Utah Symphony Orchestra and the Mormon Tabernacle Choir (DSD64 rip from SACD, Reference Recordings FR-725) and *Berlioz: Requiem* with Antonio Pappano, the Royal Concertgebouw Orchestra, and Accademia Nazionale di Santa Cecilia Chorus and Orchestra (24/352.8 FLAC download, RCO Live RCO 19006). The sound with the 40n–F206 combo was balanced and had extended bass, but it was ultimately limited by the Revel's inability to move enough air.

But this is an amplifier review and not a loudspeaker review, so I reconnected the KEF Blade Two Metas and then the Revel Studio2s. The Model 40n's power ratings—70Wpc into 8 ohms (18.5dBW), 100Wpc into 4 ohms (15.5dBW)—only barely qualify it on paper as capable of driving these speakers. However, the Marantz was able to power these larger speakers[6] sufficiently that I was able to fully appreciate their well-defined and deeply extended bass response. The soundstage was open, spacious, and detailed, and I felt that I was experiencing these speakers' true capability. This was clear enough with *Bluesiana Triangle* but all the more apparent with recordings that can convey the acoustics of a small ensemble, or even a single instrument, in a much, much larger space.

I heard Trio Mediæval's vocals in *Solacium* (24/352.8 FLAC download, 2L 2L-165) and the solitary lute of Hubert Hoffman in *From Heaven on Earth – Lute Music from Kremsmunster Abbey* (24/352.8 FLAC download, Challenge Classics CC72740) clearly and purely with the KEFs and Revels, whether driven by the Marantz 40n or by any of my regular power amps. The 40n was marginally warmer with vocals than either the Benchmark AHB2 or the NAD C 298. All three provided thrilling, enveloping ambi-

5 I used live measurements with REW to set both the LPF and level for flatness at and below crossover at the listening seat. My guess of 40Hz was spot on, but I was surprised by how much attenuation of the sub output was needed for balance. This attests to the Marantz 40n's robust sub output signal, something that has been a concern with a few other integrated amps.

6 Since a full review of the KEF Blade Two Meta is still to come, I have chosen to make no distinctions between how the Marantz 40n performs with it and with the Revel.

**measurements, continued**

the sample rate, the odd-order harmonics of the 16-bit J-Test signal's LSB-level, low-frequency squarewave were all close to the correct levels (fig.18, sloping green line). However, some broadening of the noisefloor around Fs/4 spectral component can be seen, most likely due to jitter with a low-frequency, random noise spectrum. This broadening was also evident with 24-bit J-Test noisefloor data (not shown).

To look at the Marantz's moving magnet phono input, I connected a separate ground wire from the terminal on the amplifier's chassis to the ground of the Audio Precision analyzer. I examined the phono input's behavior primarily at the headphone output, again to avoid damaging the amplifier's output stages with high-level signals.

The phono input preserved absolute polarity. The maximum gain, with the volume control set to its maximum, was 84.8dB at both the headphone output and loudspeaker outputs, so the gain of the phono section is 44.2dB. This gain value means that clipping is possible with high-level LP signals; owners should make sure the volume control isn't set near the maximum when using the phono input. I performed most of the phono-input tests with the control set to –20dB. (The exception was the overload testing, when I reduced the control by another 20dB to make sure I was looking at input overload rather than output clipping.)

The M40n's phono input impedance was 39k ohms at 20Hz, 46k ohms at 1kHz, and 40k ohms at 20kHz, values appropriate for moving magnet cartridges. The RIAA correction (fig.19) was well-matched

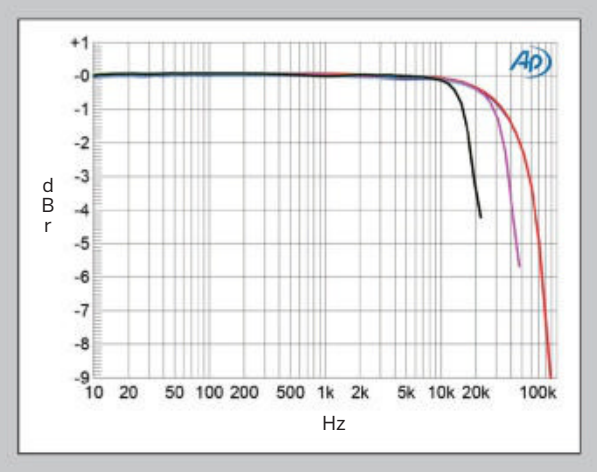


**Fig.15** Marantz Model 40n, TosLink input, F1 filter, volume control set to –20dB, frequency response at –12dBFS into 100k ohms with data sampled at: 44.1kHz (left channel green, right gray), 96kHz (left cyan, right magenta), 192kHz (left blue, right red) (1dB/vertical div.).

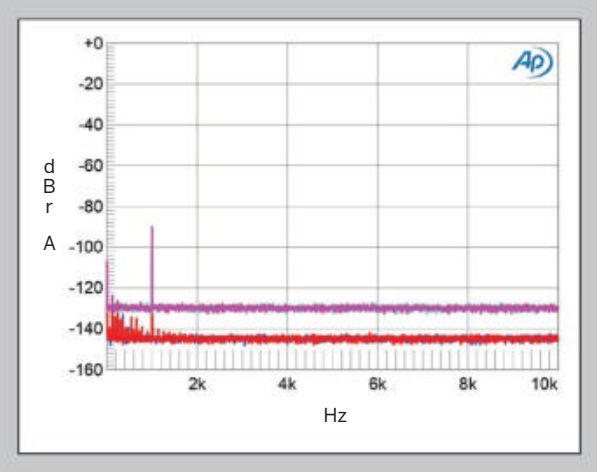


**Fig.16** Marantz Model 40n, TosLink input, volume control set to –20dB, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).

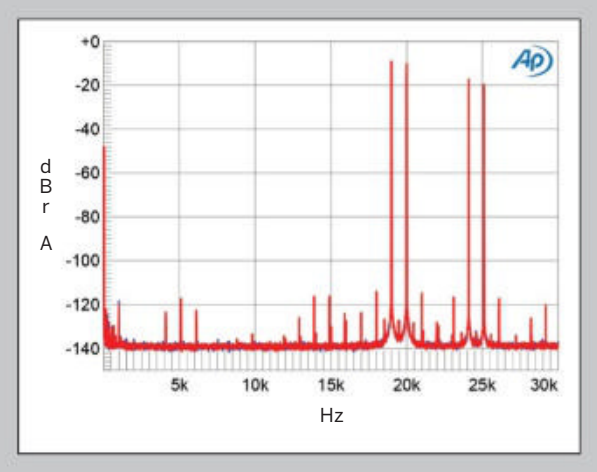


**Fig.17** Marantz Model 40n, TosLink input, Filter 1, volume control set to –20dB, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 0dBFS into 100k ohms, 44.1kHz data (left channel blue, right red; linear frequency scale).

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ance, but the illusion was a bit more convincing with the more powerful amplifiers. These differences were tiny, though, comparable to, say, different recordings of the same orchestra in the same hall. You can hear it in a direct comparison, but only if you are listening for it.

When pushed hard with the Mahler and Berlioz recordings, these two speakers (especially the less sensitive KEF) didn't do as well when driven by the Model 40n as they did with the other amplifiers—hardly a fair test. I also compared the 40n's functionality as a power amp to that of the other amps, feeding the same Topping Pre90 I used with the others into its power amp input (the direct link to the Marantz's power amp is RCA; that link to the other amps is an unbalanced XLR). My prior observations were confirmed. Overall, I thought that the 40n was an excellent performer in all situations and well beyond expectations for its rated output.

## Conclusions

Looking back at the press presentation of the Marantz Model 40n, there was a suggestion that I missed at the time, though it's obvious enough in retrospect. This new "Network Integrated Amplifier" isn't meant to be stacked with other components in an audio shrine. It is meant to be placed anywhere you want to enjoy music. It incorporates everything needed for playback from any source; just supply speakers and cables. In a sense (and I mean this with no condescension), it is a music appliance more than an audio component. The 40n is this century's answer to the AM/FM stereo receiver of the previous one.

This, though, is no "lifestyle" product. The Marantz Model 40n is a true, high-fidelity music system. It can drive any loudspeaker it's likely to be used with; its subwoofer option expands those possibilities. It was a pleasure to use and a delight to listen to. ■

## ASSOCIATED EQUIPMENT

**Digital sources** Oppo Digital UDP-105 universal disc player, Custom Intel/Win11 music server running JRiver Media Center v29 and Roon, exaSound s88 Mark II, and Okto DAC8 Pro D/A processors. QNAP TVS-873 NAS.
**Preamplifiers** Coleman Audio 7.1SW for source switching. 3 Topping Pre90s for buffer/line drivers.
**Power amplifiers** Benchmark AHB2, NAD C 298. All used as bridged monoblocks.
**Loudspeakers** KEF Blade Two Meta, Revel Ultima2 Studio with IsoAcoustics Gaia I isolation feet. Revel Performa3 F206. SVS SB-3000 subwoofer.
**Cables** Digital cables: AudioQuest Coffee (USB). Analog interconnects: Benchmark Studio&Stage XLR-XLR, Kubala-Sosna Anticipation (RCA), Cardas Cross (subwoofers). Speaker cables: Benchmark Studio&Stage, Canare 4S11 (Blue Jeans Cable). AC cables: Kubala-Sosna Emotion, SignalCable MagicPower 20A.
**Accessories** AudioQuest Niagara 5000, Brick-Wall BrickWall 8RAUD, and CyberPower 850PFCLCD UPS power conditioners, Teddy Pardo 12V PS (for exaSound s88), HDPlex 300W Linear Power Supply and AC filter (for the server).
**Listening room** 24' L × 14' W × 8' H, furnished with 2 MSR Acoustics Dimension4 SpringTraps in the front corners. Side walls lateral to L/R speakers are covered in 2"-thick, 2'-wide floor-to-ceiling OC 705 panels. Front wall has large windows partly covered by fabric drapes and 4"-thick 2' × 4' OC 705 panels. Rear of room opens into 10' × 7' foyer and a 12' × 8' dining area. —**Kalman Rubinson**

**measurements, continued**

between the channels but featured a broad rise in the midrange that reached +0.45dB at 150Hz. The phono input's unweighted, wideband S/N ratio, measured with the input shorted to ground, was a very good 69.7dB (average of both channels) referred to an input signal of 1kHz at 5mV. Restricting the measurement bandwidth to 22Hz–22kHz increased the ratio to an excellent 83dB, while switching an A-weighting filter into circuit further increased the ratio to 87.7dB.

The Marantz phono input's overload margins were commendably high from 20Hz to 20kHz, at 24.4dB ref. 1kHz at 5mV. The phono stage's distortion was very low, with all the second and third harmonics lying close to –100dB (0.001%, fig.20), even with a 1kHz tone 16dB higher than the nominal MM output level of 5mV. High-order intermodulation distortion with an equal mix of 19kHz and 20kHz tones, at a peak input level equivalent to 1kHz at 30mV, lay below –100dB (not shown), with the second-order difference product at 1kHz lying at –94dB (0.003%).

The Marantz Model 40n offers uniformly excellent measured performance from all its inputs. But I remain puzzled why its digital inputs, in common with almost all integrated amplifiers I have tested, offer considerably higher gain than necessary.
—**John Atkinson**

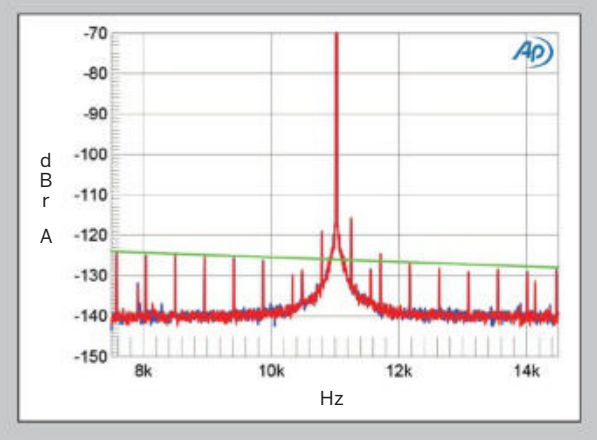


**Fig.18** Marantz Model 40n, TosLink input, volume control set to –20dB, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

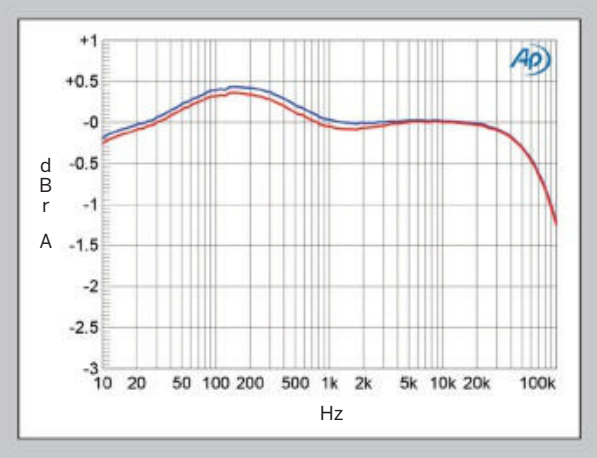


**Fig.19** Marantz Model 40n, phono input, response with RIAA correction (left channel blue, right red) and with subsonic filter (left green, right gray) (0.5dB/vertical div.).

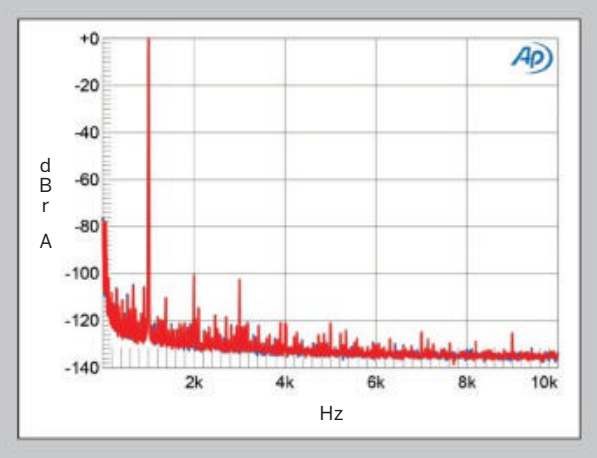


**Fig.20** Marantz Model 40n, MM phono input, spectrum of 1kHz sinewave, DC–10kHz, for 30mV input (left channel blue, right red, linear frequency scale).

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JOHN ATKINSON

# Q Acoustics Concept 50

## LOUDSPEAKER

Given how crowded the loudspeaker manufacturing space has always been, I am always surprised when a new brand not only springs into being but does so with new speakers that sound and measure well. Take the UK's Q Acoustics, for example. The company didn't exist before 2006 and didn't have a presence in the US until 2018. However, two of its designs have already received very favorable coverage in *Stereophile*: the Concept 500 tower ($5999.99/pair), which Tom Norton reviewed in March 2019, and the Concept 300 standmount ($4499.99/pair, including stands), which I reviewed in January 2020.[1]

Q Acoustics' new Concept 50 floorstanding loudspeaker ($2995/pair) is the top model in a new series of loudspeakers that uses technology trickled down from the earlier Concepts. Because my experience with the Concept 300 was so positive, I readily agreed to review the 50.

### The Concept 50

Like the Concept 500, the Concept 50 uses a vertical D'Appolito drive-unit configuration, the 0.9" fabric-dome tweeter positioned between two 5" plastic-cone woofers. The propri-

1 See stereophile.com/content/q-acoustics-concept-500-loudspeaker and stereophile.com/content/q-acoustics-concept-300-loudspeaker.

## SPECIFICATIONS

**Description** Two-way, reflex-loaded, floorstanding loudspeaker. Drive units: two 5" (125mm) plastic-cone woofers; 0.9" (25mm) fabric-dome tweeter. Crossover frequency: 2.1kHz. Frequency response: 42Hz–30kHz –6dB. Average impedance: 6 ohms. Minimum impedance: 3.6 ohms. Sensitivity: 90.5dB/2.83V/m. Distortion (120Hz–20kHz @ 2.83V RMS): <0.2%. Recommended amplifier power: 25–150W. Supplied accessories: foam port-blocking plugs, custom suspension system with stabilizer and carpet-piercing spikes.
**Dimensions** 40.4" (1025mm) H × 16.5" (418mm) W × 12.6" (319mm) D including spikes and stabilizer. Weight: 50.5lb (22.9kg) each.
**Finish** Gloss dark gray.
**Serial numbers of review samples** QA2952 0621 00117 & '00168. "Designed and engineered in the UK; made in China (PRC)."
**Price** $2999/pair. Approximate number of US dealers: 25 (see qacoustics.com/collections/concept-range#showrooms); also sold direct. Warranty: 5 years.
**Manufacturer** Q Acoustics, Unit 2, Woodside, Bishop's Stortford CM23 5RG, England, UK.
Tel: (855) 279-5070.
Web: qacoustics.co.uk (UK), qacoustics.com (US).

etary drivers are mounted on a 0.12"-thick aluminum sub-baffle at the top of the enclosure with pretensioned studs, and the tweeter is mechanically isolated from the front baffle to minimize mechanical interference from the woofers. The crossover is set to 2.1kHz, a lower frequency than is usual for a tweeter this size, which Q Acoustics says is possible because the unit's resonant frequency is at 700Hz. The crossover itself is mounted on the speaker's sprung base plate to keep it as far away as possible from the magnetic fields associated with the drive-unit motors.

A sprung base plate? Q Acoustics has paid a lot of attention to addressing the cabinet's vibrational behavior. The Concept 50's enclosure features the company's proprietary Gelcore construction, which is intended to reduce higher-frequency noise. Each panel consists of two MDF layers separated by a compliant layer. To address lower-frequency cabinet noise, Q Acoustics used Finite Element Analysis to determine where to add internal braces, called P2P (point-to-point) bracing, at strategic positions. And to eliminate low-frequency cabinet noise, the Concept 50's base comprises two plates. The upper plate is fixed to the enclosure and isolated from a lower plate with 14 compliant spheres. The lower plate sits on two carpet-piercing spikes at the front and on a gently curved stabilizer bar fitted with two more spikes at the rear. (Ball-end feet are also supplied.) This suspension made the speaker a bit wobbly to the touch but not to the point where it was unstable. (One of our cats, who likes to sit on the tops of the speakers I am reviewing, will vouch for that.)

The woofers each use a relatively large voice-coil with a 30.5mm diameter, wound from low-mass, copper-clad aluminum wire on a fiberglass former. According to a Q Acoustics white paper, Finite Element Analysis was used to optimize the design of the surround and Nomex spider to give a symmetric compliance characteristic. The woofers are reflex loaded with a flared port 2" in diameter placed a quarter of the way up the rear panel, and an internal vertical pipe, which Q Acoustics calls a HPE (Helmholtz Pressure Equalizer), is said to reduce internal pressure and standing waves.

Electrical connection is via four (two sets) high-quality binding posts at the bottom of the rear panel. With its gloss-painted finish, the Concept 50 has an elegant appearance.

## Setting up

The main source of music was my Roon Nucleus+ feeding audio data over my network to an MBL N31 CD player/DAC, which was connected to a pair of Parasound Halo JC 1+ monoblocks. The Q Acoustics speakers were single wired with AudioQuest Robin Hood cable. I later used the Concept 50s with my Mark Levinson No.30.6 D/A processor to prepare my review of the WiiM Mini Wi-Fi streamer (see p.103).

Like the JansZen Valentina P8 loudspeaker I reviewed in the June issue, it quickly became apparent that even with their ports open, the Concept 50s needed to be closer to the wall behind them than was possible in my room. (This is due to a short flight of stairs behind the right-hand speaker that runs up to the vestibule.) I therefore experimented with the

## MEASUREMENTS

I used DRA Labs' MLSSA system, a calibrated DPA 4006 microphone, and an Earthworks microphone preamplifier to measure the Q Acoustics Concept 50's frequency response in the farfield. I used an Earthworks QTC-40 mike for the nearfield and in-room responses and Dayton Audio's DATS V2 system to measure the impedance magnitude and electrical phase angle.

Q Acoustics specifies the Concept 50's anechoic sensitivity as 90.5dB/W/m. My estimate was somewhat lower, at 88.1dB/2.83V/m. The Concept 50's impedance is specified as 6 ohms, with a minimum value of 3.6 ohms. The impedance magnitude (fig.1. solid trace) varied between 6 ohms and 10 ohms over most of the audioband, with a minimum value of 3.79 ohms at 4kHz. The electrical phase angle (dotted trace) is generally benign, though it does reach –56° in the upper bass. Fortunately, the magnitude is high in this region, but the effective resistance, or EPDR,[1] lies close to 3 ohms at 53Hz, between 96Hz and 262Hz, and between 1.6kHz and 4kHz, with a minimum value of 2.18 ohms at 2.58kHz. As long as the partnering amplifier is comfortable driving 4 ohms, the Concept 50 won't present it with any drive problems.

The saddle at 42Hz reveals that this is the tuning frequency of the port on the rear panel. With this port sealed with the supplied foam plug, the impedance traces (fig.2) are typical of a sealed enclosure tuned to a relatively high 70Hz.

There is an unusual peak centered on 162Hz in the magnitude traces in figs.1 and 2 as well as the hint of a discontinuity around 600Hz. When I investigated the enclosure's vibrational behavior with a plastic-tape accelerometer, I didn't find anything at 162Hz, but a pair of resonant modes between 500Hz and 600Hz was present on all the panels (fig.3). These modes are both relatively low in level and sufficiently high in frequency that they should not have audible consequences.

The red trace in fig.4 shows the response of the port, measured in the nearfield. The output peaks just below the tuning frequency, and the upper-frequency

1 EPDR is the resistive load that gives rise to the same peak dissipation in an amplifier's output devices as the loudspeaker. See "Audio Power Amplifiers for Loudspeaker Loads," *JAES*, Vol.42 No.9, September 1994, and stereophile.com/reference/707heavy/index.html.

Stereophile Q Acoustics Concept 50R Impedance (ohms) & Phase (deg) vs Frequency (Hz)

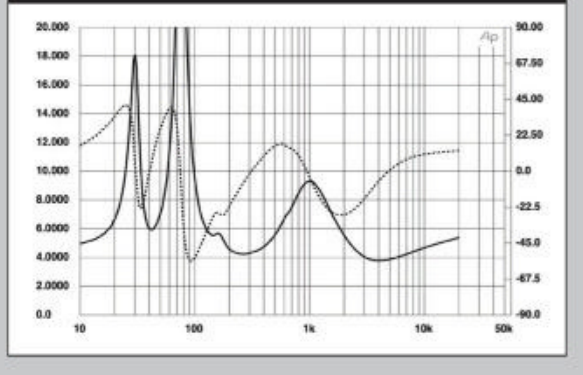


**Fig.1** Q Acoustics Concept 50, electrical impedance (solid) and phase (dashed) with port open (2 ohms/vertical div.).

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distance of each speaker from its closest sidewall to give the most even midbass and upper bass balance.

With the Concept 50s sitting on their spikes, the tweeters were 32" from the floor, which is a few inches below my ear height. However, listening to the dual-mono pink noise track on my *Editor's Choice* CD (Stereophile STPH016-2), I didn't hear any significant change in tonal balance if I slouched or sat up straight.

## Listening

With their ports open, the Concept 50s cleanly reproduced the 1/3-octave warble tones on the *Editor's Choice* CD down to the 50Hz band, with the 80Hz and 50Hz warbles a little lower in level than those at either side. The 40Hz warble was reproduced higher in level than the one at 50Hz, and the 32Hz tone was reinforced by the lowest room mode. The 25Hz and 20Hz tones were inaudible. The warble tones sounded very clean, with no "doubling" (adding second-harmonic distortion). The half-step–spaced tonebursts on *Editor's Choice* spoke cleanly down to 100Hz, with those lower in frequency suppressed a little and those around 1kHz slightly accentuated. Listening to the enclosure's wall with a stethoscope while the tonebursts played, I could hear a narrow band of liveliness between 500Hz and 600Hz, particularly on the rear panel a few inches above the port.

The dual-mono pink noise track on *Editor's Choice* was reproduced as a narrow, stable central image, with no splashing to the sides at any frequency and with very little "vertical venetian blind" effect (comb filtering) as I moved my head from side to side. The noise signal did sound a touch mellower than I had experienced with the GoldenEar BRXes and Bowers & Wilkins 804 D4s, however.

I confirmed this with a track from an album with which I was intimately familiar, "Decision Point" from the Jerome Harris Quintet's *Rendezvous* (16/44.1 ALAC file, STPH013-2),[2] which I had recorded and mixed. Billy Drummond's cymbals had a little less high-treble swish than I was used to, but the presentation was otherwise natural-sounding. Drummond's kickdrum and Harris's acoustic bass guitar were reproduced with excellent upper-bass articulation, and the Concept 50s' soundstage reproduced the instrumental images with stability and appropriate depth.

One bassist led to another—Harris to the late Charlie Haden, dueting with pianist Brad Mehldau on the album *Long Ago and Far Away (Live)* (24/88.2 MQA FLAC, Impulse/Tidal). Haden's double bass had good weight and leading-edge definition, though Mehldau's piano was pushed forward at me a little more than I was anticipating. I turned again to a recording I know well, a live concert from 1992 with pianist Robert Silverman performing works by Bach, Chopin, Schubert, and Schumann (16/44.1 ALAC, Stereophile STPH005-2). I had to use a spaced pair of omnidirectional microphones for this recording, so the stereo imaging is not well focused, something the Q Acoustics speakers, with their well-focused imaging ability, readily let me know. But listening to Silverman's empathetically delicate performance of Schubert's *Moments Musicaux*,

2 This CD is out of print, but the files can be downloaded or streamed from jeromeharris.bandcamp.com/album/rendezvous.

**measurements, continued**

rollout is disturbed by what appears to be a peak at 162Hz. The peak coincides with a suckout at the same frequency in the woofers' nearfield output (blue trace; both woofers behave identically). The woofers' response is otherwise reasonable even before it crosses over to that of the tweeter just below 3kHz. This frequency is higher than the specified 2.1kHz, which may be due to the fact that the tweeter's average level is a couple of dB lower than that of the woofer.

The complex sum of the woofer and port responses is shown as the black trace below 300Hz in fig.5. There is little sign of the usual peak in the midbass region that will be due to the nearfield measurement technique, which assumes that the drive units are mounted in a true infinite baffle, ie, one that extends to infinity in both planes. The woofers' reflex alignment is therefore overdamped, which implies that the speaker will give the highest low-frequency output when it is placed relatively close to the wall behind it. The suckout at 162Hz is present but is less well-developed when the port is blocked (red trace).

The black trace above 300Hz in fig.5 shows the Concept 50's quasi-anechoic farfield response, averaged across a 30° horizontal window centered on the tweeter axis. Again, although the response is relatively even in the midrange and low treble,

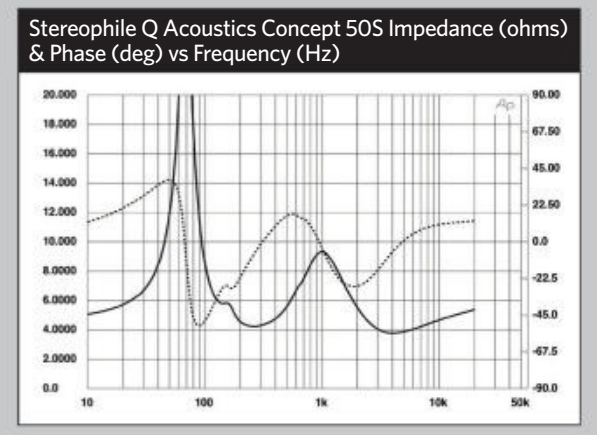


**Fig.2** Q Acoustics Concept 50, electrical impedance (solid) and phase (dashed) with port closed (2 ohms/vertical div.).

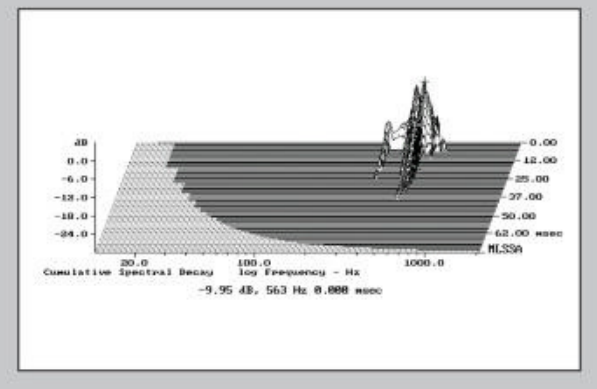


**Fig.3** Q Acoustics Concept 50, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of front baffle below drive units (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

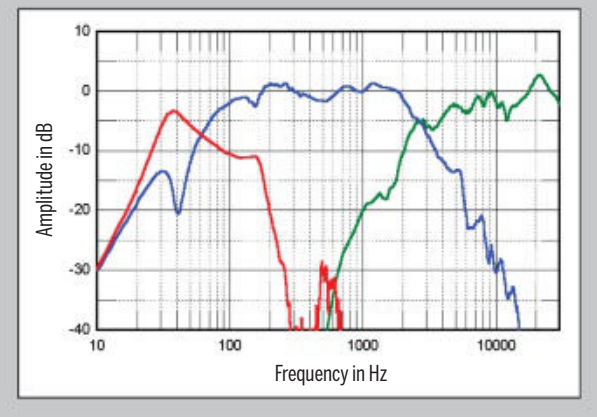


**Fig.4** Q Acoustics Concept 50, acoustic crossover on tweeter axis at 50", corrected for microphone response, with the nearfield response of woofers (blue) and port (red), respectively plotted below 350Hz and 680Hz.

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the piano still sounded a touch more forward than I am used to, though the warmly supportive acoustic of the Albuquerque church in which I had captured the sound was readily apparent.

To further investigate the Concept 50's low-frequency behavior, I played a needle drop of a favorite solo organ recording, the late Philip Ledger's *Organ Music from Kings* (24/192 ALAC, ripped from EMI). The Q Acoustics speakers had no problem reproducing the low-frequency pedal notes that underpin the climaxes in César Franck's Chorale No.3 in A Minor. (The sound pressure level at the listening chair reached 93.5dB(C), slow ballistics.) And neither did they complain when fed the massive low frequencies on my unreleased recording of Jonas Nordwall performing Widor's Organ Symphony No.5 (24/88.2 AIFF file[3]). The Concept 50 may not have the full low-frequency extension of more expensive tower speakers, but it has sufficient dynamic range and low-enough distortion in the bass to satisfy with these organ recordings.

*Stereophile*'s founder, the late J. Gordon Holt, used to say that if a loudspeaker's midrange isn't right, it doesn't matter how well it reproduces the lows or the highs. Playing both female and male vocal tracks revealed that all was well with the Concept 50's midrange. Roon followed the Ledger album with another 24/192 needle drop: the late Peter Skellern singing "About a Quarter to Nine," a song made famous by Al Jolson, from

the singer's 1982 album, *A String of Pearls* (UK LP, Mercury). The piano intro wasn't pushed forward in the mix and Skellern's plaintive lead vocal was nicely surrounded by his multitracked "oohs" and harmonies.

I followed Skellern with another of my own recordings, Eriks Ešenvald's arrangement of "Amazing Grace" on the Portland State Chamber Choir's *Into Unknown Worlds* album (16/44.1 ALAC, CD available from Amazon). Despite the many times I have listened to this track, Geo McAllister's delicate-sounding solo soprano vocal raised goosebumps, such was the clarity of the Q Acoustic speakers' midrange. And the Concept 50s' stable, accurate stereo imaging allowed the singer's image to occupy center stage with the choir arranged in a cleanly defined, stably positioned arc behind and to the sides.

While the Concept 50s' high frequencies are slightly softened, which tended to throw the upper midrange forward with solo piano recordings, its lack of overall coloration, its articulate low frequencies, and its stable, accurate stereo imaging all contributed to a musically enjoyable time in which they lived in my system. As I said before, I would have liked to position the speakers closer to the wall behind them than was possible in my room, but after I finished my critical listening, I experimented with Roon's parametric equalization DSP

3 Readers are welcome to download this recording from dropbox.com/s/wjjuj9keg0kvkow/Widor_mixdown.aif?dl=0.

**measurements, continued**

the output in the region covered by the tweeter is shelved down. I suspect that this is the reason my estimated sensitivity was lower than the specified figure. The pair matching between the two samples was excellent, however, the difference in farfield response falling within ±0.25dB limits from 800Hz to 8kHz. The trace in fig.5 was taken without the grille. The response with the grille (not shown) reduced the level between 3.5kHz and 11kHz by up to 3dB at some frequencies.

Fig.6 shows the Concept 50's horizontal dispersion, normalized to the response on the tweeter axis, which thus appears as a straight line. The contour lines in this graph are even, though there is slightly greater mid-treble output to the speaker's sides, which will tend to compensate for the lack of energy in the same region in the on-axis output. Fig.7 shows the speaker's dispersion in the vertical plane. The tweeter-axis response is maintained over a wide ±10° window, and the hint of a suckout in the crossover region doesn't develop until 15° above the reference axis.

The red trace in fig.8 shows the Q Acoustics Concept 50's spatially averaged response[2] in my room with their ports open. The response is reasonably even from 300Hz to 3kHz, though with a slight

2 Using the FuzzMeasure 3.0 program, a Metric Halo MIO2882 FireWire-connected audio interface, and a 96kHz sample rate, I average 20 1/6-octave-smoothed spectra, individually taken for the left and right speakers, in a rectangular grid 36" wide × 18" high and centered on the positions of my ears.

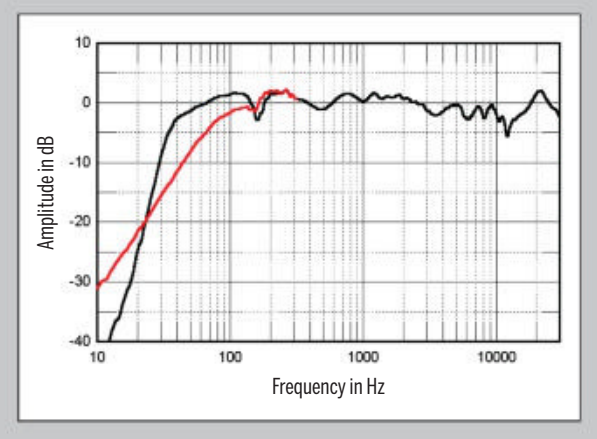


**Fig.5** Q Acoustics Concept 50, anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with the complex sum of the nearfield woofer and port responses (black) and the nearfield sealed-box woofer response (red), both plotted below 300Hz.

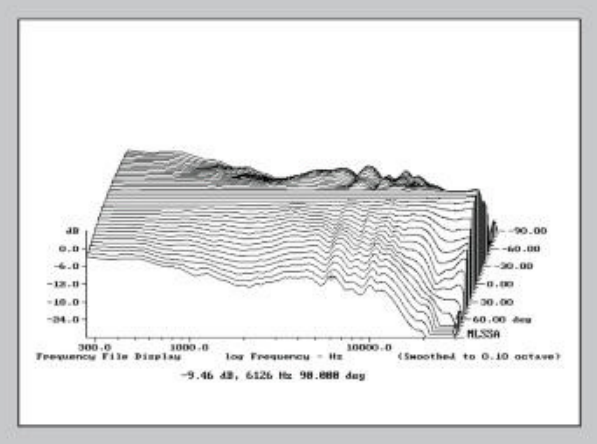

**Fig.6** Q Acoustics Concept 50, lateral response family at 50", normalized to response on tweeter axis, from back to front: differences in response 90°–5° off axis, reference response, differences in response 5°–90° off axis.

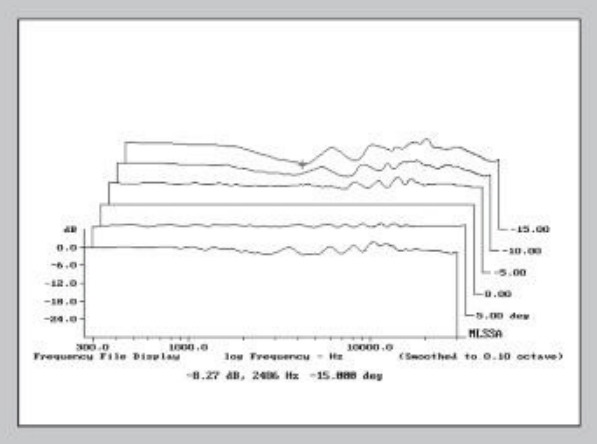

**Fig.7** Q Acoustics Concept 50, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 15°–5° above axis, reference response, differences in response 5°–10° below axis.

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**Analog source** Linn Sondek LP12 turntable with Lingo power supply, Linn Ekos tonearm, Linn Arkiv B cartridge, Channel D Seta L phono preamplifier.
**Digital sources** Roon Nucleus+ file server; WiiM Mini, used as a network bridge; Ayre Acoustics C-5xe$^{MP}$ universal player; MBL N31 CD player/DAC; Mark Levinson No.30.6 D/A processor; Ayre Acoustics QA-9 A/D converter; NetGear Nighthawk router.
**Power amplifiers** Parasound Halo JC 1+ monoblocks.
**Loudspeakers** Bowers & Wilkins 804 D4. GoldenEar BRX, JansZen Valentina P8.
**Cables** Digital: AudioQuest Vodka (Ethernet), AudioQuest Coffee (USB), DH Labs (1m, AES3). Interconnect: AudioQuest Wild Blue (balanced). Speaker: AudioQuest Robin Hood. AC: AudioQuest Dragon Source & High Current, manufacturers' own.
**Accessories** Target TT-5 equipment racks, Ayre Acoustics Myrtle Blocks; ASC Tube Traps, RPG Abffusor panels; AudioQuest Niagara 5000 Low-Z Power/Noise-Dissipation System (amplifiers) and AudioQuest Niagara 1000 Low-Z Power/Noise-Dissipation System (source components). AudioQuest Fog Lifters cable supports. AC power comes from two dedicated 20A circuits, each just 6' from breaker box.
**Room** 20' (left side), 25' (right side) × 16' × 8'.—**John Atkinson**

function. A 3dB boost in the octave between 63Hz and 125Hz resulted in a subjectively even balance throughout the mid- and upper-bass regions.

### Conclusion

A while back I wrote that $7000/pair was becoming the sweet price spot for affordable tower speakers, offering excellent sound quality and measured performance without much in the way of compromise. The Q Acoustics Concept 50 lowers that sweet spot to $3000/pair. Okay, the fact that it's made in China will contribute to the lowering of the sweet spot price, but this immaculate-looking, -sounding, and -measuring loudspeaker gets a strong recommendation from me for use in moderate-sized rooms like mine. Just make sure you can place it close to the wall behind it. ■

**measurements, continued**

excess of energy in the upper midrange. There is insufficient upper- and midbass energy due to the fact that I wasn't able to move the speakers as close to the wall behind them as necessary. The response gently slopes down in textbook fashion above 3kHz, due to the increased absorption of the room's furnishings as the frequency increases. For reference, the blue trace in fig.8 shows the spatially averaged response of the Bowers & Wilkins 804 D4s, which I reviewed in January 2022.[3] The B&Ws have too much mid- and high-treble energy in-room compared with the Q Acoustics speakers and have a less-even midrange. They also excite the lowest-frequency mode in my room to a slightly greater extent.

In the time domain, the Concept 50's step response (fig.9) indicates that all three drive units are connected in positive acoustic polarity. The decay of the tweeter's step, which arrives first at the microphone, smoothly blends with the start of the woofers' step, which implies optimal crossover implementation. The Concept 50's cumulative spectral-decay plot on the tweeter axis (fig.10) is superbly clean.

The Q Acoustics Concept 50's measured performance is indicative of excellent audio engineering.—**John Atkinson**

3 See stereophile.com/content/bowers-wilkins-diamond-series-804-d4-loudspeaker.

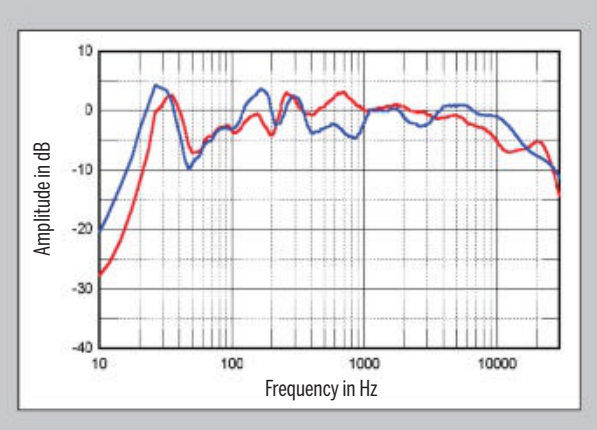


**Fig.8** Q Acoustics Concept 50, spatially averaged, 1/6-octave response in JA's listening room (red), and of the Bowers & Wilkins 804 D4 (blue).

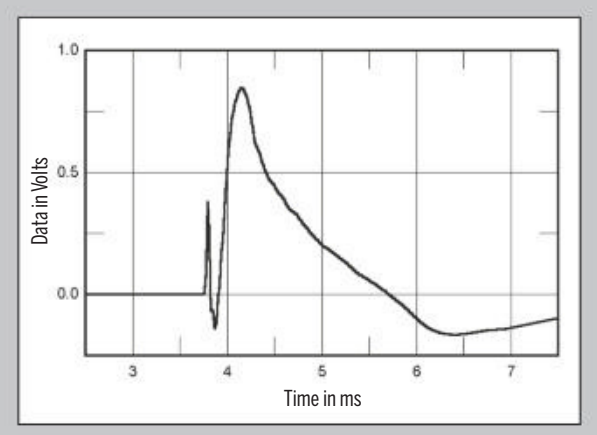


**Fig.9** Q Acoustics Concept 50, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

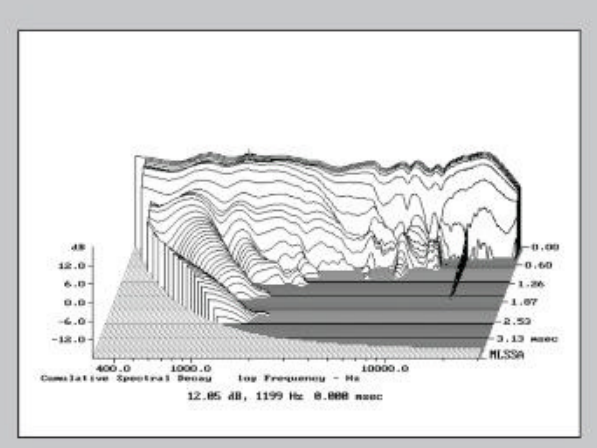

**Fig.10** Q Acoustics Concept 50, cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).

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WHAT OBSESSION SOUNDS LIKE

ALEX HALBERSTADT

# Ideon Ayazi mk2 and 3R Master Time Black Star

## D/A CONVERTER AND CLOCK

My little corner of Brooklyn happens to have a terrific little record shop. I like it for the usual reasons: well-chosen merchandise, fair prices, fun music on the speakers while you browse. But I like it just as much because great record stores tend to resemble one another in more idiosyncratic ways, and this one has the earmarks of the great record stores of my youth. It's run by a middle-aged guy with an ambiguous past, a lawyerly knowledge of recorded music, and the uneasy charisma of a carnie, and staffed by the guy's teenage male acolytes, who comport themselves like insiders privy to a really stupendous secret. For those willing to hang out, it can be a place of authentic learning, like an impromptu grad-school seminar with Johnny Paycheck or the Mighty Diamonds on the stereo.

I learned about music in places like this one, having figured out that the occasional eye roll was worth putting up with for the information and knowledge on offer. I grew up at a time when music was obtainable mostly on physical media: records, CDs, cassettes. It was usually necessary to buy a recording in order to hear it, so one's budget had to be apportioned impactfully. Reliable insider dope was crucial.

Today, the internet and streaming have revolutionized access to music in ways that are frankly thrilling (if not for musicians, then definitely for listeners). I teach college classes, and my music-loving students know more about a broader array of music than I did at their age, thanks partly to YouTube and Spotify. During the most isolating months of the pandemic, Roon, Tidal, and Qobuz allowed me to spend many happy hours learning about Indian classical music, the pop traditions of Ethiopia, Mali, and Senegal, and some obscure corners of lover's rock and classic reggae, propelled record by record through the Tidal and Qobuz catalogs by Roon's machine-learning algorithms.

What I'm getting around to saying is that, for many of us, streaming has become a crucial part of our musical diets, more indispensable than CDs ever were. For me though, this musically exciting fact is sonically challenging, because I have a strong preference for music pressed on vinyl. I've listened to, and reviewed, plenty

### SPECIFICATIONS

**AYAZI MK2**
**Description** 32-bit digital/analog converter. Digital inputs: S/PDIF electrical on RCA, up to 24 bits and 192kHz. Asynchronous USB Type 2 and up on USB-B, up to 32 bits, 384kHz. Analog outputs: one, stereo RCA. Maximum output level: 2.0V RMS. Output impedance: 250 ohms. Frequency response: 10Hz–25kHz, ±0.5dB. S/N ratio (DC–20kHz): >112dB. THD+N (1kHz FS, 96kHz/s): 0.002%. Crosstalk: –110dB. **Dimensions** 11.4" (290mm) × 6.7" (170mm) × 3.1" (80mm). Weight: 16lb (7.2kg). **Finish** gray. **Serial number of unit reviewed** Z200027. Designed, manufactured, and assembled in Greece. **Price** $3950. Approximate number of dealers: 20. Warranty: Seven years with registration.

**3R MASTER TIME BLACK STAR**
**Description** "Highest Precision USB re-clocking platform" with "triple ultra-low noise linear power supply" and "dual-drive," "stabilized" output. **Dimensions** 11.4" (290mm) × 6.7" (170mm) × 3.1" (80mm). Weight: 14lb (6.3kg). **Finishes** Silver and black. **Serial number of unit reviewed** M200105. Designed, manufactured, and assembled in Greece. **Price** $3950. Approximate number of dealers: 20. Warranty: Seven years with registration.
**Manufacturer** Ideon Audio, Parren 6, Neo Psichiko 11525 Athens, Greece.
Tel: +30 210 619 9887.
Web: ideonaudio.com.
Distributed in the US and Canada by Audio Skies, Los Angeles, CA.
Tel: (310) 975-7099.
Email: info@audioskies.com.
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of nice-sounding digital gear, but I cannot remember many times I thought, "wow, this sounds *incredible*!" the way I sometimes do when I listen to a system organized around a well–set-up turntable.

Many digital sources excel at reproducing the contours of music, including the tiny sonic minutiae some listeners call "plankton." What they struggle with is filling in those contours with realistic information that registers as texture, color, impact, physicality, presence, and, most importantly, a sense of tonal density—of music pressurizing the air. I tend to think of these qualities as reproduced music's third dimension; for me, they are essential to the illusion of a musical event happening in my listening room. Unfortunately, these qualities do not show up on an oscilloscope.[1] Engineering a digital source that is able to engage and hold your attention is not addressed by simple strategies like lowering distortion or minimizing jitter. It requires a more complex and multilateral approach.

Which brings me to the Ideon Ayazi mk2 DAC ($3950) and 3R Master Time Black Star USB reclocker (also $3950), a two-box digital source that made me think about the ways a component can encourage us to seek out certain musical experiences. Founded in Athens in 2016 by George Ligerakis and Vasilis Tounas, Ideon Audio manufactures only digital gear and takes some unorthodox approaches to getting it to sound good. Consider the Ayazi mk2, which is designed around the ESS9023 DAC chip. These days, some perfectionist DACs in a similar price bracket convert data using R-2R resistor networks, while others rely on many lines of custom code. In contrast, the Ayazi relies on the ESS chip and its onboard filters; according to Ligerakis, the special sauce lies in the way it's optimized and used. Ideon emphasizes regulated, stable linear power supplies and "persistent" reclocking. If I had assumed that the inexpensive integrated DAC chip told me something about how the Ideon stack would sound, I would have been completely wrong.

In the metal, the Ideon components are as spare as they are elegant. Their petite yet reassuringly heavy battleship-gray cases, which measure roughly 11" × 7" × 3", reflect their streamlined purpose; the front panel of the Ayazi contains only a power switch and an input selector offering a choice of USB and S/PDIF. The 3R Master Time Black Star (typing the full name of this product makes me feel a little silly, so I will refer to it henceforth as the Master Time) greets the listener only with tastefully dim LEDs marked "power," "lock," and "host." On the back of the Ayazi you will find the two aforementioned inputs, a pair of RCA analog outputs, and an IEC power receptacle. The rear of the Master Time offers a USB input and output, a switch for the 5V power rail, and, of course, another power cord input. That's it. The Ideon components boast no selectable filters or oversampling options, no network inputs, no I²S or MQA. They don't even decode DSD. The choices reflect what Ligerakis described to me as the "particularly Spartan approach" he took to maximizing the listening experience; this reference from Ideon's Greek CEO delighted the geek in me.

In use, the Ideon stack is simplicity itself: I connected the Sonore opticalRendu streamer to the Master Time using an AudioQuest Diamond USB cable, then routed another Diamond USB cable from the Master Time to the Ayazi. Then I set Roon to convert DSD files to PCM. Game on.

## Listening

To get an obvious question out of the way: Yes, I did listen to the Ayazi without the Master Time. By its lonesome, the Ayazi reproduced music with less resolution and timbral accuracy and created a spatially smaller, less lifelike sound. Music sounded duller and less compelling. After checking this experiment off my list, I left the two components connected. This review is of the Master Time and Ayazi together.

The most obvious aspect of listening through the Ideon stack was how well it organized the recordings played through it. Nothing was exaggerated or missing, including deep bass and the high highs; nothing sounded strident or splashy. This sense of order was heightened by a profound silence. Digital components aren't generally known for being noisy, but the Master Time/Ayazi cre-

1 Maybe they do if you know what to look for.—**Jim Austin**

## MEASUREMENTS

I measured the Ideon Ayazi mk2 with my Audio Precision SYS2722 system.[1] I performed the testing using the Ayazi's coaxial S/PDIF input, which accepted data sampled at all rates up to 192kHz, and its USB port. I repeated some of the tests feeding data to the 3R Master Time Black Star's USB port, the data then passed to the Ayazi's USB port. Apple's AudioMIDI utility revealed that the Ayazi's and Black Star's USB ports accepted 16- and 24-bit integer data sampled at all rates from 44.1kHz to 384kHz. Apple's USB Prober app identified both the Ideon products as "AYAZI True HD Audio\000" from "IDEON-AUDIO\000," with the vendor ID as "C-MEDIA ELECTRONICS INC." (C-Media Electronics is a Taiwanese computer hardware manufacturer.) The USB ports operated in the optimal isochronous asynchronous mode.

The Ideon's analog output preserved absolute polarity (ie, was noninverting), and the output level with full-scale 1kHz data was 1.975V, a negligible 0.11dB lower than the specified 2V. The output impedance was a low 234 ohms at 20Hz and 1kHz, 230 ohms at 20kHz.

The Ayazi's impulse response with 44.1kHz PCM data (fig.1) indicates that the reconstruction filter is a conventional linear-phase type, with symmetrical ringing before and after the single full-scale sample. With white noise sampled at 44.1kHz, the filter rolled off quickly above

1 See stereophile.com/content/measurements-maps-precision.

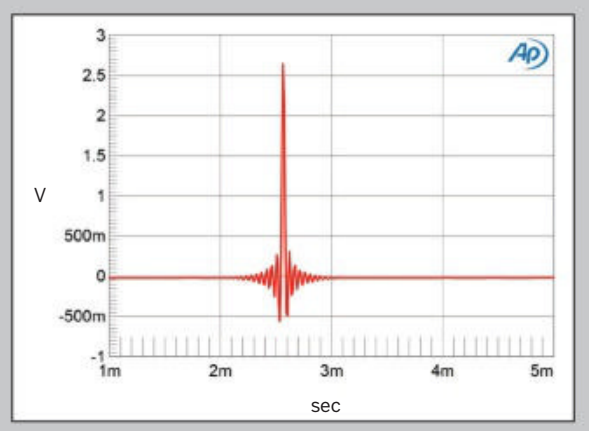


**Fig.1** Ideon Ayazi mk2, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

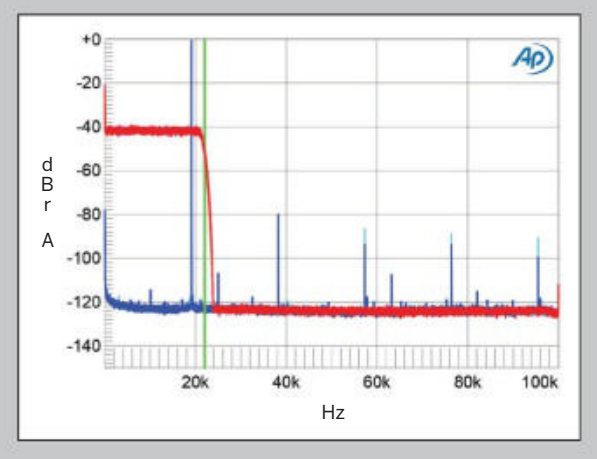


**Fig.2** Ideon Ayazi mk2, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan) into 100k ohms with USB data sampled at 44.1kHz (20dB/vertical div.).

ated a *musically significant* silence, in part because of the remarkable resolution on hand.

The Ideon components presented recordings as though bathed in brilliant light, with every speck of information illuminated in high contrast. In particular, they portrayed decay and reverberant trails with more precision and sustain than any source I've heard at home. On "I Believe in You," from Talk Talk's otherworldly *Spirit of Eden* (16/44.1 FLAC, Parlophone/Qobuz), a record that has become deservedly recognized as a key precursor to post-rock and an unclassifiable masterpiece in its own right, the low-level notes from Tim Friese-Greene's electric guitar were rendered with such shimmering vividness that they seemed less like sounds and more like tumbleweeds blowing across the soundstage.

The Master Time/Ayazi rendered music with none of the artifacts of early digital reproduction, which boil down to the sense of hollowness I touched on earlier: the impression that the music is a flickering hologram with little inside it. Best of all, the Ideon stack's minutely detailed presentation didn't detract from the music's weight. Here, I'm not talking about the weight of low bass tones but rather the realistic sense of weight possessed by actual instruments and voices. And it imbued recordings with remarkable solidity, a genuinely lovely effect.

Over the weeks I spent listening to these Greek components, a funny thing happened. As much as I admired them, their way with texture, presence, and color saturation—the tonal juiciness of a recording—was no match for the turntable and handful of low-output moving coil cartridges that lived on the shelf above them.

**measurements, continued**

the audioband (fig.2, magenta and red traces), reaching full stop-band attenuation at 24kHz. The aliased image at 25kHz of a full-scale tone at 19.1kHz (cyan, blue) was therefore suppressed by more than 100dB. The harmonics associated with the 19.1kHz tone are all low in level, with the second harmonic the highest at just –80dB (0.01%).

Fig.3 shows the Ideon's frequency response with S/PDIF data sampled at 44.1, 96, and 192kHz. The responses at all three sample rates follow the same basic shape: flat in the audioband with then a sharp rolloff just below half of each rate. Below 3kHz, channel separation (not shown) was excellent, at 99dB, R–L, and 108dB, R–L. It decreased to a still-excellent 94dB in both directions at the top of the audioband. The low-frequency noisefloor (fig.4) showed a power supply–related tone at 60Hz, but this was very low in level, at –110dB (0.0003%). The blue and red traces in this graph were taken with USB data. With S/PDIF data (green and gray traces), there was a slight rise in the noisefloor close to the fundamental tone. The spectrum with USB data fed to the Black Star clock and then to the Ayazi was identical to the blue and red traces in fig.4.

The Ayazi's linearity error with 24-bit data (not shown) was negligible until the signal lay below –120dBFS, which implies

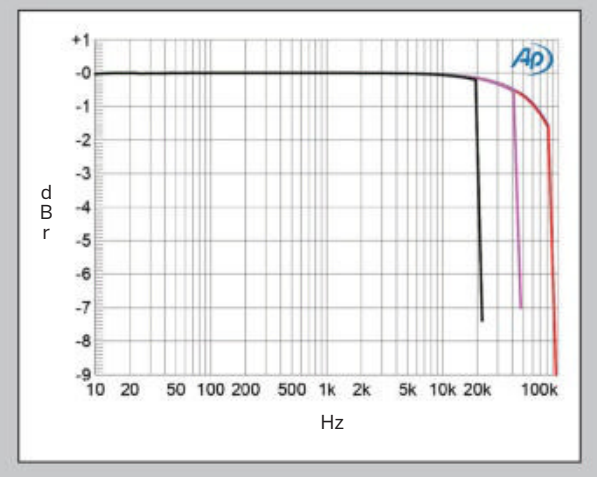


**Fig.3** Ideon Ayazi mk2, frequency response at –12dBFS into 100k ohms with S/PDIF data sampled at: 44.1kHz (left channel green, right gray), 96kHz (left cyan, right magenta), and 192kHz (left blue, right red) (1dB/vertical div.).

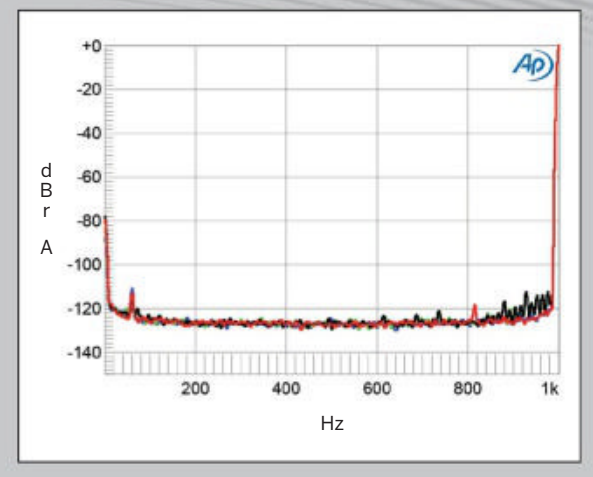


**Fig.4** Ideon Ayazi mk2, spectrum with noise and spuriae of dithered 1kHz tone at 0dBFS with 24-bit USB data (left channel blue, right red) and 24-bit S/PDIF data (left green, right gray) (20dB/vertical div.).

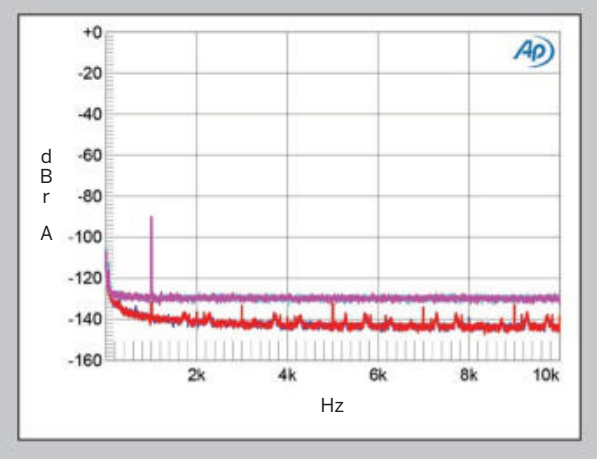


**Fig.5** Ideon Ayazi mk2, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit S/PDIF data (left channel cyan, right magenta), 24-bit S/PDIF data (left blue, right red) (20dB/vertical div.).

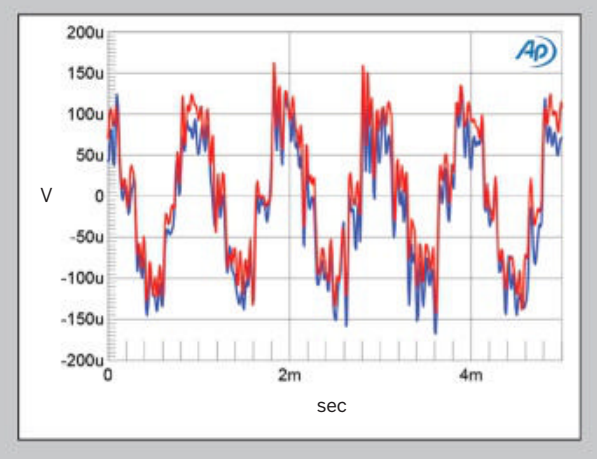


**Fig.6** Ideon Ayazi mk2, waveform of undithered 1kHz sinewave at –90.31dBFS, 16-bit data (left channel blue, right red).

# Already Mythical

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I'm not sure any digital source can surpass a good turntable in this regard. But it became increasingly clear that the Master Time/Ayazi accomplished something that the analog source couldn't: It created a pristine, spectrally quiet sonic world in which I could enjoy the unfolding of the most delicate musical events. After a while, I realized that the Ideon stack was subtly altering my listening habits, encouraging me to reach more often for music filled with these kind of diaphanous moments, which tend to be present most reliably on classical recordings.

Sviatoslav Richter's 1960 performance of Beethoven's "Appassionata" (16/44.1 rip of BMG 07863-56518-2) is one of the marvels of recorded piano. It was committed to tape during his first visit to the West, belated because the Ukraine-born pianist—a closeted gay man whose father was murdered during Stalin's purges—was politically suspect in his native Soviet Union. Richter turned the stately, flowing first movement into a harrowing statement; he dramatically extended the composition's dynamics and took such liberties with the tempo that listening to it can constrict the throat with suspense. Weeks earlier, he had closed his first appearance at Carnegie Hall with a similarly radical performance of the Beethoven sonata, shocking the audience.

The Master Time/Ayazi reproduced the acoustic of New York's Webster Hall, where RCA engineer Lewis Layton recorded him, in all of its cavernous vastness; hearing the hall reverberate with Richter's violent attack on the keyboard made the performance disturbing and powerful. The Ideon stack also allowed me to hear that no matter how forcefully Richter struck the keys, his playing remained in perfect control, a testament to his unearthly technique.

I compared the Master Time/Ayazi combination to my Sonnet Morpheus, another highly resolving DAC, which uses an R-2R conversion scheme. Listening to the beguiling title track from Bert Jansch's *Rosemary Lane* (16/44.1 FLAC, Transatlantic/Qobuz) through the Morpheus, Jansch's John Bailey–built acoustic guitar and quiet yet expressive singing sounded just as detailed but notably less coherent, both musically and sonically, than through the Ideon stack. The recording sounded splashier, with somewhat less weight,

**measurements, continued**

high resolution. An increase in bit depth from 16 to 24 with dithered data representing a 1kHz tone at –90dBFS (fig.5) dropped the Ayazi's noisefloor by 13dB, which suggests that the DAC's resolution is around 18 bits. The presence of the third, fifth, and seventh harmonics with 24-bit data (blue and red traces) suggests that the least-significant bit is being truncated. Repeating the spectral analysis with USB data with and without the external clock gave an identical result. When I played undithered data representing a tone at exactly –90.31dBFS, the three DC voltage levels were well-resolved (fig.6), though the symmetrical waveform was overlaid with high-frequency random noise.

Driving high impedances, the Ayazi produced very low levels of harmonic distortion. With a full-scale 50Hz tone, the second harmonic was the highest in level in the right channel, at just –90dB (0.003%, fig.7). The third harmonic lay at –94dB (0.002%) in both channels. With the Ideon DAC driving the punishing 600 ohm load, the distortion increased dramatically (not shown), unless I reduced the signal level by 6dB. The Ayazi should not be used with preamplifiers that have an input impedance below 1k ohms. Intermodulation distortion with an equal mix of 19 and 20kHz tones, each lying at –6dBFS and sampled at 44.1kHz, was very low in level into high impedances (fig.8).

Fig.9 shows the spectrum of the Ayazi's output when it was fed high-level, 16-bit J-Test data via S/PDIF. The odd-order harmonics of the undithered low-frequency, LSB-level squarewave lie at the correct levels, indicated by the sloping green line, though a trio of low-level spurious tones is present between 8kHz and 10kHz. These tones disappeared when I repeated the analysis with 16-bit J-Test data sourced via USB (fig.10), though a pair of low-level sidebands at ±120Hz was now present. I ran the test again with a wire connecting the Ayazi's ground to the analyzer's chassis ground; the sidebands were still present, as they were when I performed the spectral analysis by feeding USB data to the external Black Star clock then to the Ayazi.

Overall, Ideon's Ayazi did well on the test bench. I didn't find any difference in its performance when fed USB data directly or via the 3R Master Time Black Star.

**—John Atkinson**

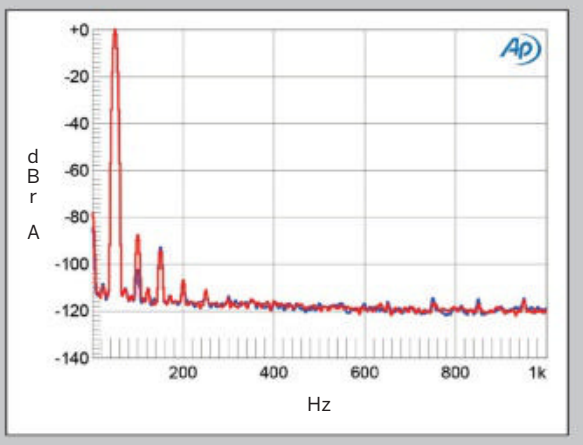


**Fig.7** Ideon Ayazi mk2, 24-bit S/PDIF data, spectrum of 50Hz sinewave, DC–1kHz, at 0dBFS into 100k ohms (left channel blue, right red; linear frequency scale).

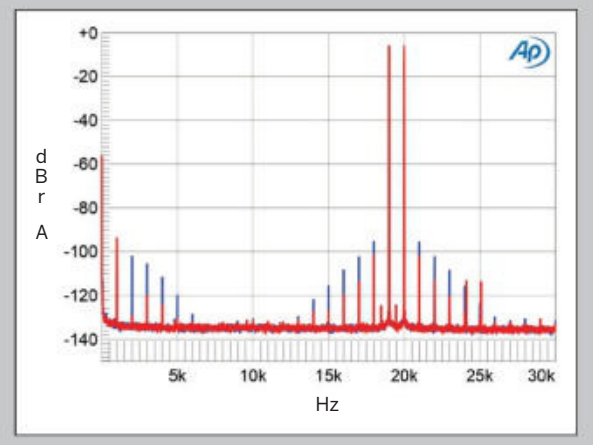


**Fig.8** Ideon Ayazi mk2, 24-bit S/PDIF data, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 0dBFS into 100k ohms, 44.1kHz data (left channel blue, right red; linear frequency scale).

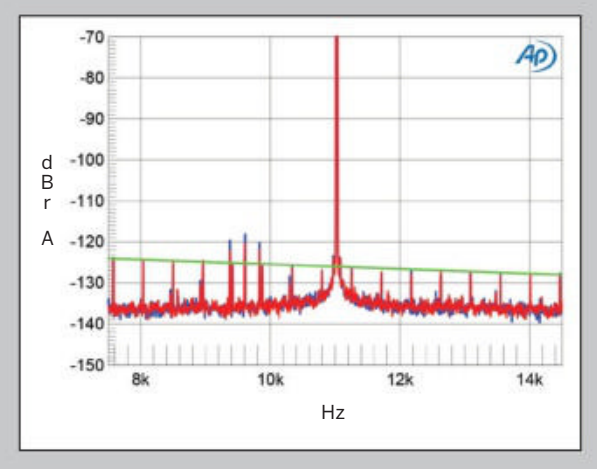


**Fig.9** Ideon Ayazi mk2, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit S/PDIF data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

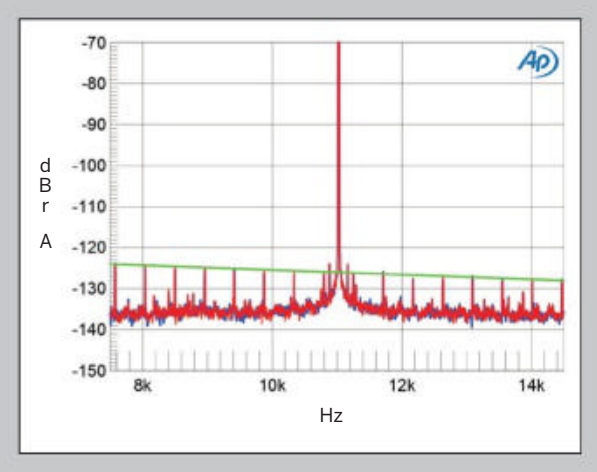


**Fig.10** Ideon Ayazi mk2, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit USB data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

and didn't hold my attention as reliably as it did when played through the Master Time/Ayazi. The Ideon rendition also sounded meaningfully quieter and slightly more dynamic. But then, even when I factor in the Denafrips Iris digital-to-digital converter I use to feed the Morpheus's I²S input, the Dutch DAC costs about half as much as the Ideon stack.

During my time with it, the Master Time/Ayazi offered me something I didn't know I wanted. No audio component offers every desirable aspect of sound reproduction, which means we have to settle for acceptable compromises. My version of audio heaven is the world's best jukebox playing endless 45s; my choices in gear tend to prioritize dynamics, unambiguous bass, vast soundstages, and plentiful helpings of tone color, drive, and physicality. Of course, that is not the *only* path to paradise, and the Ideon components provide the kind of musical thrills one might hear through the original Quad electrostatic speakers: a crystal-clear, essentially neutral, hyperdetailed window onto the music that captures every nuance without sacrificing music's weight and body.

During my time with it, the Ideon stack operated flawlessly, offering no intrusions on my enjoyment. With a combined price of $7800, it is by no means inexpensive, but it provides good value for the refined musical spectacle it creates. That it inspired me to explore music that usually forms a relatively small portion of my musical diet is a testament to how compelling the Ideon stack makes the files played through it, and it is by no means a one-trick pony: It can play every kind of music with all of its strengths intact. I simply found listening to certain genres on it to be a revelation. If I were a listener of primarily classical and acoustic music, I would travel far to hear one. ■

## ASSOCIATED EQUIPMENT

**Analog sources** Garrard 301 turntable in a Box Furniture Co. plinth; Thomas Schick 12" tonearm and headshell. Technics SL-1200G turntable; Dynavector Te Kaitora Rua cartridge; Hana Umami Red cartridge; Ortofon Cadenza Bronze cartridge; Ortofon SPU Classic G cartridge; Zu/Denon 103 cartridge.
**Digital sources** Sonnet Morpheus DAC; Denafrips Iris digital-to-digital converter; Sonore opticalRendu; Small Green Computer sonicTransporter i5 server running Roon Core.
**Preamplification** Shindo Aurieges preamplifier; Sutherland Little Loco phono preamplifier; Lejonklou Entity phono preamplifier; Parasound Halo JC 3+ phono preamplifier.
**Amplification** Line Magnetic LM-845IA (used as a power amplifier); Pass Labs INT-60; Ayre AX-5 Twenty.
**Loudspeakers** Altec Valencia 846A.
**Cables** Interconnect: Auditorium 23; Linn Silver; AudioQuest Firebird and Thunderbird; Speaker: AudioQuest Thunderbird Zero; Auditorium 23; AC: AudioQuest Thunder and Hurricane; Triode Wire Labs Digital American. USB: AudioQuest Diamond; Ethernet: AudioQuest Diamond.
**Accessories** Box Furniture Co. Heritage stand; Box Furniture Co. amplifier stand; AudioQuest Niagara 3000 power conditioner; Sonore opticalModule; Sonore Audiophile Linear Power Supply, DJM Electronics GigaFOILv4-INLINE Ethernet filter; Vinnie Rossi MINI PURE-DC-4EVR 9-Volt DC Power Supply; IsoAcoustics OREA Bordeaux isolation footers; Ayre/Cardas Myrtlewood blocks; Feickert Next Generation Universal Protractor, AudioQuest Anti-Static Record Brush; Last Stylus Cleaner; VPI Industries HW-16.5 record cleaning machine. —**Alex Halberstadt**

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ROGIER VAN BAKEL

# Sonus faber Omnia

## WIRELESS SPEAKER

Pop quiz. What does the following verbiage describe? And what does it *mean*?

> *"It's about what we love the most. It's about what we hate the most. It's about what we wait for but never happens. Relationships turn on, interrupt, and resume. Or sometimes they just stay still. Floating and suspended. So breathe in. Let go. Let's begin from nothing."*

Huh. Any luck yet?

> *"And suddenly we discover that it's easier than we thought. It's more powerful than we ever imagined. You can see and feel what's around you with an intensity that you never felt before. Just embrace the most pure and authentic connection. Life."*

The words are spoken over two minutes of footage showing hyperattractive millennials and Gen Z'ers. There's also a blink-and-you-miss-it cutaway to a grandfather type. The shiny happy people in the video read, swim, dance, lounge, and make love in curated spaces where every book and album sleeve is placed to look like it ended up there by chance. At the end, a young woman draped in flowing white fabric jumps into a pool and, captured by an underwater camera, does her best Weeki Wachee mermaid impression, rotating slowly within a giant letter O.

If you guessed that this is a promo for Sonus faber's new $1999 Omnia wireless speaker[1]—well, then apparently you've already seen the video. The company's copywriters again outdid themselves with the Omnia's digital brochure,[2] describing the new product as "an organic architecture of technological desires" and exulting that "our journey is inspired from connection, the truest relationship of humankind—the link to life."

That last quote, though still pretentious for my taste, isn't wrong. Music *is* a link to life, and the enjoyment of music *is* a matter of making connections (when it comes to recorded music, both liter-

**Radiohead's "Everything in Its Right Place" (16/44.1 FLAC, Tidal) was particularly expansive via the Omnia.**

1 See youtu.be/VwI7td-M9Ik.
2 See bit.ly/3PqP4cy.

## SPECIFICATIONS

**Description** Wireless stereo, 4-way, DSP-optimized closed-box system. Two .75" silk-dome drivers; two 3" paper-pulp cone drivers; two 1.75" cellulose-pulp membrane drivers; one 6.5" long-throw aluminum-cone driver. Frequency response 30Hz–25kHz, –6dB. Power rating (sum of all channels): 490W. Inputs: phono, line in, HDMI ARC. Network connectivity: Ethernet (10/100Mbps); Wi-Fi dual-band 2×2 802.11 b/g/n/ac (2.4GHz and 5.2GHz).
**Dimensions** 5.1" × 25.6" × 11.1" (130 × 650 × 282mm)
**Weight** 16.75lb (7.6kg)
**Finishes** Walnut veneer, graphite (black)
**Serial number of unit reviewed** OMI21100000539
**Price** $1999
**Manufacturer**
Sonus faber,
Via A. Meucci 10, 36057
Arcugnano (VI), Italy.
Tel: (39) 0444-288788.
Web: sonusfaber.com/en-us.
US distributor:
Sumiko,
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Maple Grove, MN 55369.
Tel: (510) 843-4500.
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ally and figuratively). We music lovers *are* seeking the proverbial wavelength that lets us meld our minds and hearts with a favorite performer. When it works, it's one of the most pleasurable and satisfying of human links. How close can the Sonus faber Omnia get us?

## Omnia vincit amor

Maybe this is surprising for a diehard audiophile, but I'm enamored of good wireless speakers. High-quality sound in a compact package is nothing to scoff at. This is an area where true innovation and tight, smart engineering redefine the possible, so I keep a keen eye peeled.

In my bedroom, I often listen to a pair of Alexa Studio speakers ($199 each), set up in stereo. I enjoy their spacious audio, although imaging is far less than what's achievable, and timbral accuracy leaves something to be desired. In the TV room, sound comes from an Atmos-equipped Samsung HW-N950 soundbar ($1700) connected to the television via HDMI ARC. It's good for soundtracks and dialog, but not very involving with the musical genres I favor: jazz, pop, and Americana, among others. My kitchen and porch are enlivened by a MartinLogan Crescendo X wireless ($1000, now discontinued) I move from place to place, which puts in a pleasing if workaday performance, falling short in sparkle and midrange crispness.

Sonus faber's Omnia is twice the price and easily twice as good as the MartinLogan, but there are other contenders. Most notably, there's the $1799 Naim Mu-so 2, which Julie Mullins reviewed for *Stereophile* in 2020.[3] I've listened to both generations of the Mu-so for many hours, and I borrowed the current model during my final two weeks of listening to the Omnia.

## How's it looking?

Sonus faber's new all-in-one streaming solution follows the Italian company's SF16 solo speaker, which was launched in 2017, and which I've unfortunately never heard. The SF16 was notable both for its eye-popping $12,000 price tag and for the two motorized arms that extend from the sides, each holding 2" front- and rear-firing midrange drivers and tweeters the size of a nickel. Both the much lower price and the ad campaign make it clear that the new Sonus faber speaker is meant to appeal to a broader demographic than its robotic predecessor did.

About that demographic: Livio Cucuzza, Sonus faber's chief of design, research, and development, told me that he and his crew actually had *two* target groups in mind. "Existing Sonus faber owners can use Omnia beyond their listening room, so they can enjoy the same timbre as their loudspeakers in a compact and smart package. For new customers, we aim to meet the needs of a younger audience with a passion for design, home decor, luxurious finishes, film and television viewing, and music on vinyl."

You read right: Cucuzza said vinyl. The Omnia is the only wireless speaker I know of that comes with a phono stage. Its use requires a dongle, with stereo RCA inputs and a ground terminal. This lets you connect a turntable with a moving magnet cartridge, preferably with output between 2.4mV and 5mV. (You can also use those same RCAs to connect a line-level source; just flip a switch inside the Omnia's half-hidden cable-connection nook.)

This phono add-on is welcome, but a dongle—an untidy doohickey with a tail—clashes with the all-in-one concept of this sleek-looking speaker, even if you hide it behind the speaker while in use. I suspect that's why, in the aforementioned 24-page brochure, chock-full of product photos, there are no photos of the phono dongle.[4]

Besides the dongle, there's also an Ethernet port and an HDMI ARC input (and, of course, an AC power connection). Notable for its absence is a subwoofer output; Cucuzza says that his product is intended to be "a compact package, ready for every occasion. The Omnia has one 6.5" woofer and is capable of 108dB SPL; we didn't feel a need to add an external sub."

At not quite 26", the Omnia is about the same width as the MartinLogan CLX and Naim's Mu-so 2. I've heard visitors say that its curves remind them of Bowers & Wilkins's estimable Zeppelin, cut down the middle lengthwise. Perhaps because my review specimen was finished in walnut veneer (there's also a dark graphite version), for me it evoked a different kind of vintage transportation: a 1950s Chris-Craft wooden boat, all sleekness and classic style, but here with angled-outward, flattened transoms at both ends. The Omnia's 4.5"-tall remote control mimics the speaker's shape—a nice touch.

## User interface

Except for a tiny reset switch on the back, there are no buttons on the Omnia—not conventional ones, anyway. To power it on and off, you press and hold a 2"-long top-mounted light strip, which Sonus faber calls the "center control line." Swipe it to select a different source. When it turns blue, that's Bluetooth—easy enough, but good luck remembering that AirPlay is white, HDMI is orange, Chromecast is yellow, Spotify is green,

3 See stereophile.com/content/naim-mu-so-2nd-generation-music-system. Aesthetically, a better comparison might be with the Mu-so Wood Edition, which costs $1999. **—Jim Austin**

4 The extensive promo photography Sonus faber provided also has no shots that show the phono dongle.**—Jim Austin**

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Roon is purple, phono is pink, and Tidal is turquoise.

A lighted dot on each side of that line—also tappable—lets you adjust the volume. As the level goes up and down, a much longer light strip expands and contracts accordingly. Nifty. Two other lighted strips round out the novel user interface: The middle one indicates a successful network connection, and the rearmost strip lets you know when a firmware update is in progress. Other patterns and animations indicate things like booting up, a factory reset, and the availability of new software. They're all just rare enough that I don't think I'd learn to match the light-strip behavior with the action the speaker is performing, except for the volume indicator, which is intuitive.

The speaker grille, which is not intended to be removed, runs in a 180° curve from front to back. The two sides are visually identical except for a small, silver Sonus faber logo at the top of the front fascia. If you *were* to peel off the grille, you'd see seven drivers. Facing you would be two 0.75" silk-dome tweeters (with neodymium motor systems, says Sonus faber) plus a pair of 3" paper-pulp–cone midrange drivers. On the bottom and firing down is a 6.5" long-throw aluminum-cone woofer. Sonus faber built 1.75" inverted-dome cellulose-pulp–membrane transducers into the left and right sides of the Omnia, firing sideways to widen the soundstage.

To limber up those drivers before listening critically, I played pink noise through the Omnia at night and music at moderate volumes during daytime—about 100 hours total.

But before I did that, I had to set up the device, which turned out to be trickier than expected.

## Snags

The Omnia comes with a three-page quick-start guide that's heavy on illustrations and short on text[5]—where are those garrulous copywriters when you need them? I established a Bluetooth connection in no time, but preparing the Omnia to play *lossless* music wasn't as straightforward. (The speaker will play hi-rez files up to 192kHz.) The instructions say that to establish a connection, you can either use your iOS device's Settings app or tap "Add Accessory" in Apple's Home app—but then the Home app wants you to either scan a QR code provided by the manufacturer or hold your phone or tablet close to the device you're adding. When I placed my iPhone 12 Pro Max next to the activated Omnia, nothing happened, and there was no QR code on either the product itself or in the quick-start guide. The Home app told me that "Some accessories can be added through the manufacturer's app," but the Omnia doesn't have an app.

Eventually, I *did* find that scannable QR code; it was on the back of the warranty card: an odd place to put it. But when I scanned the code, a pop-up message said, "This site can't be reached." Only when I connected the Omnia to my router with an Ethernet cable did I "see" the speaker in my phone's settings. When I tapped it, it became the default output device. Was I now able to stream better-than-Bluetooth music files? Not yet: The Home app insisted that it had "No Internet Connection," even though I could pull in email and visit websites. Apparently an iPhone error—not Sonus faber's fault but a snag nonetheless.[6]

I rebooted my modem and both of my routers and then swapped in a new Ethernet cable. Presto: The error went away, and everything came together. Now I was able to load the webpage where Sonus faber lets you update the Omnia's firmware and change its settings. For instance, you can turn on a feature, loudness, which makes bass more pronounced and livelier at low volumes. This is also where you specify whether the Omnia is close to a wall, in which case a clever algorithm massages the sound to reduce boominess.

The webpage further lets you play with Sonus faber's proprietary Crescendo feature. The company says that Crescendo "combines a mix of in-phase bipole and anti-phase dipole sound schemes." When I asked Cucuzza to elaborate, he wrote, "Crescendo uses advanced signal-processing tricks … to create a bigger soundstage and enveloping sound. To do so, we needed to work on how to design the side speakers and how to implement the right delays and create out-of-band EQ … to enhance the omnidirectional feeling without introducing interferences with the on-axis radiation."

Crescendo is binary: on or off. There are no frequency bands to tweak or curves to adjust. You either like what it does, or you don't. Cucuzza says the sound profile he and his people chose "reflects our standard of sound, crafted by our team according to the Sonus faber DNA." With it engaged, the Omnia's sound was more spacious—and not, as far as I could tell, at the expense of accurate imaging. I liked it.

The Omnia comes with a remote: black with gray silk-screened function icons. Because it isn't backlit, and the tactile feedback is so-so, it's not optimal in a low-lit room.

One thing that differentiates the Omnia from the similar Naim Mu-so is that the Omnia has no dedicated app; control is via a remote control or a webpage, the latter of which you must bookmark—either that or type in a URL each time. Cucuzza, though, is adamant that a dedicated

5 There is however a manual online, at sonusfaber.com/en/products/omnia/#onlinemanual.
6 As I wrote in As We See It in the May issue of *Stereophile*, networking issues are fraught, and it can often be difficult to figure out who to blame. See stereophile.com/content/no-server-island.**—Jim Austin**

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app is best avoided, and it's a fair point. "Customers find multiple touch points frustrating. They already know how to use that [Tidal, Spotify, or Roon] app. So, keeping things familiar made sense to us: one source of control, one source of content, and no clicking between apps." The webpage approach mostly works fine and even has some advantages: It works with any device with a web browser (as long as it's on your local network), and it isn't necessary to download, install, and learn how to use an app. A downside is that you can't use the webpage to change sources—although Cucuzza points out that this is usually automatic, since the Omnia switches to the currently active input. That's a good solution as long as you aren't switching among more than one active input, in which case one must use the remote control.

Cucuzza's team focused, he explained, on "a solid and excellent experience in the handover of the music, plus on the sound of the product—without needing to redefine a control-interface app that our customers told us they'd generally not use."

## Getting an earful

It was time to play some music—but which source to use? Spotify is lossy. AirPlay and Chromecast have limited resolution. Tidal Connect serves up CD-resolution FLAC plus MQA.

But the best way to use the Omnia—at least the best way I tried—is with Roon. The Omnia is Roon Ready, which means it uses Roon's Advanced Audio Transport (RAAT). Roon allows playback of your whole digital library, plus Tidal, Qobuz—internet radio, too—at sample rates up to the Omnia's limit of 192kHz. With the unit on an open shelf about a foot off the floor, "Hunting Wabbits" by Gordon Goodwin's Big Phat Band (24/44.1 AAC, Tidal) induced happy toe-tapping, but the limited height of the soundstage was immediately noticeable. Soundstage *width*, on the other hand, was quite good, thanks no doubt (in part at least) to those side-firing drivers. Radiohead's "Everything in Its Right Place" (16/44.1 FLAC, Tidal) was particularly expansive via the Omnia.

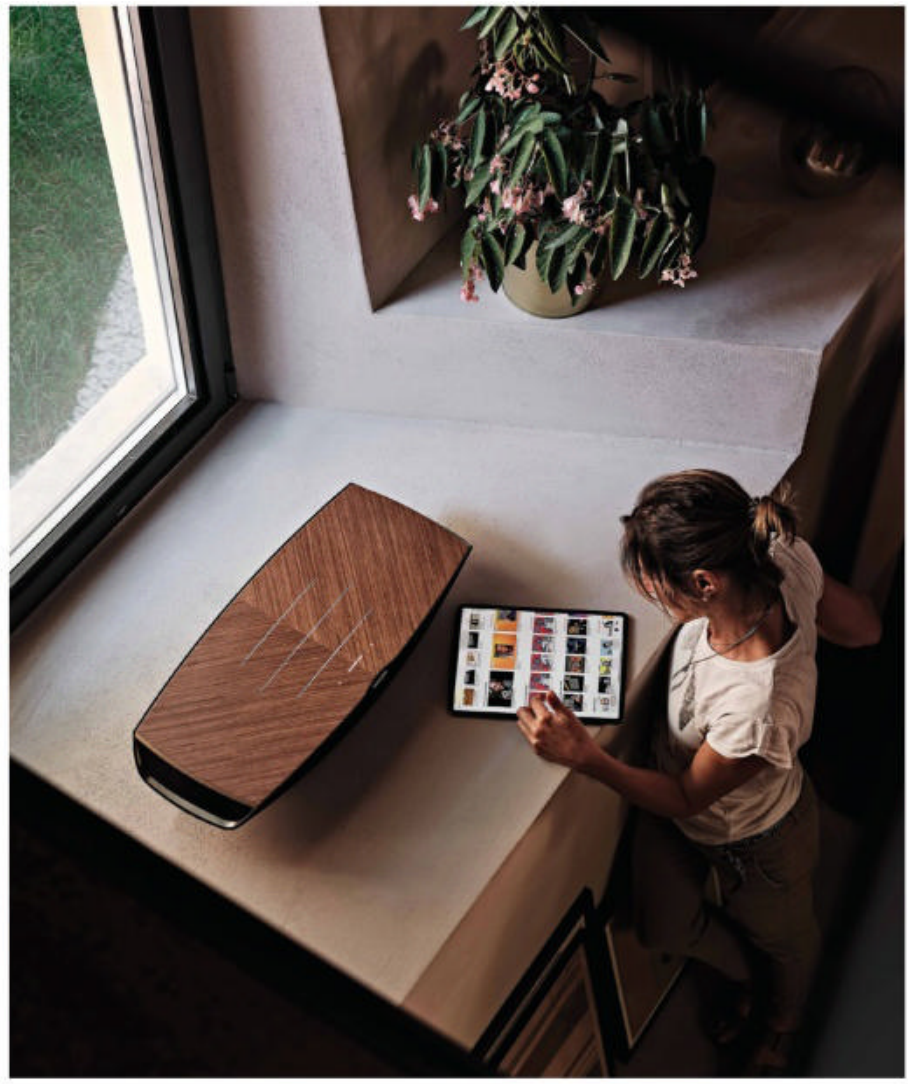
The next day, I placed the speaker just below ear height and dragged my chair about a foot closer. Much better. The sonic image now was a bit taller and more involving. Next, I listened to the tone of some solo instruments, including Charles Berthoud's electric bass guitar on "Unstoppable" (16/44.1 FLAC, Tidal), which the Omnia rendered surprisingly close to life, producing that exciting, clean, metallic *zing* you get from fresh, flat-wound strings.

As you might expect from a 6.5" woofer in an enclosure whose interior can't be much bigger than half a cubic foot, bass is restricted in the lowest octaves. Erykah Badu's "Rimshot" (16/44.1 FLAC, Qobuz) is built on three deep bass guitar notes. The last one—a C1, two notes below the open E that's traditionally the lowest note on a bass—clocks in at 33Hz, and though the Omnia is rated down to 30Hz, the speaker reproduced that final note with significantly less energy than the two that preceded it. Definition and timbre were still quite good though. Most music I played had a proper foundation, with enough bass weight to satisfy, even seduce.

With about two weeks of critical listening left, I began switching between the Omnia and the Naim Mu-so 2, playing to each one the same recordings from Roon. The differences I heard were mostly small, but not inconsequential.

I started with "Wishful Beginnings," one of David Bowie's most unsettling recordings (16/44.1 FLAC, Tidal). It's less a song than a lurid, Lynchian soundscape. Bowie's pained, creepy crooning of "I'm so sorry little girl"—an apology to the child the song's character is about to murder—came through well enough on both speakers but with a chesty quality on both that I don't hear on my main rig.

On "Soul Driven," by Robert Miles and Trilok Gurtu (16/44.1 FLAC, Tidal), the barely audible monolog in the beginning



### ASSOCIATED EQUIPMENT

**Digital sources** 16" MacBook Pro M1 Max and iPhone 12 Pro Max, running Roon. Roon ROCK (Lenovo ThinkCentre). Sony S9000ES SACD player. Naim Mu-so 2. MartinLogan Crescendo X.—**Rogier van Bakel**

sounded more real on the Naim. The sparse tambourine hits on Mark Hollis's "The Gift" (16/44.1 FLAC, Tidal) had more bite on the Omnia; but on the same track, the bass guitar seemed juiced even after I turned the loudness off via the Omnia webpage. On the Mu-so, the bass had a touch more clarity and definition. The Omnia throws a wider soundstage and, as I noted, adds that phono input. With complicated orchestral pieces at higher SPLs, neither speaker could equal what a good system of separates (with two large speakers) can do. Which is no surprise.

## Sonically gifted

The Omnia wireless speaker is beautifully designed, well built, and sonically gifted. I'd pick it over the MartinLogan Crescendo X or the B&W Zeppelin in a heartbeat.

Naim's Mu-so 2 is a more serious competitor. The designs are very different. The stark, boxy Mu-so looks as if it was created by the set designers of *2001: A Space Odyssey*. I could see people—and not just those who love Sonus faber's aesthetics—preferring the Omnia. The Omnia's design is more classically midcentury, which (ironically, considering the current calendar year) seems more *now*.

Given the high quality of the Omnia's drivers and the undisputed talents of the Sonus faber team, I wouldn't be surprised if different DSP profiles brought out more of the speaker's innate qualities in the future. Already though, it's a seriously stylish 21st century bridge between your hi-fi and an old-school table radio. ■

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JOHN ATKINSON

# WiiM Mini

## STREAMING D/A PREAMPLIFIER

Characteristically, the email from Kal Rubinson got straight to the point: "I have a WiiM Mini that I have played with, but I am not the right one to review this as I am not sufficiently interested in or knowledgeable about wireless streaming. It … can handle uncompressed PCM via its DACs."

"I'll review it," I replied, intrigued by a $99 D/A processor that can stream hi-rez audio via Wi-Fi and that also has an analog input so it can act as a preamplifier. Functionally, the Mini resembles the Lumin P1 that I reviewed in the April 2022 issue[1] but at a tiny fraction of the Lumin's price. I was particularly interested in using the WiiM streamer as a network bridge with legacy D/A processors that don't have a network or USB port, such as the Mark Levinson No.30.6 I bought in the 1990s.[2]

### The Mini

The WiiM Mini is a tiny, circular device just 1" high, made by Linkplay Technology. The top has three capacitive touch icons—Play/Pause, Volume Up, and Volume Down—and a multicolor LED that indicates basic functional status and activity. It flashes white quickly when the Mini is booting up and slowly when it is ready to be set up; it flashes green quickly when it is connecting to a Wi-Fi network and slowly when it is ready to pair with Bluetooth. When the Mini is connected to a Wi-Fi network, the LED glows solid white. Around the side of this circular device are an auxiliary two-channel analog input on a 3.5mm stereo jack, a two-channel analog output, also on a 3.5mm stereo jack, a USB-C port for connecting the supplied 5V power supply, a TosLink optical S/PDIF output, and a tiny hole covering a microphone that WiiM says is "AMIC for AirPlay 2 sync." That's all there is to

1 See stereophile.com/content/lumin-p1-streaming-da-preamplifier.

2 See stereophile.com/digitalprocessors/159/index.html.

**Audio files up to 16/48 can be streamed to the Mini via AirPlay 2, but hi-rez audio up to 24/192 can be streamed to it via Wi-Fi with the WiiM Home app.**

## SPECIFICATIONS

**Description** Streaming D/A processor/preamplifier with Bluetooth 5.1 and 2.4GHz/5GHz dual-band Wi-Fi compatibility. Supported audio file formats: MP3, AAC, ALAC, FLAC, WAV, WMA, etc. Compatible streaming services: Spotify, Amazon Music, Deezer, TuneIn, Tidal Connect, Qobuz, iHeartRadio, Napster, SoundMachine, etc. Power input: USB Type C jack. Analog input: Line, 3.5mm stereo jack, maximum input 1V. Digital output: S/PDIF (TosLink), PCM 16/24 bits, 44.1–192kHz. Analog output: 3.5mm stereo jack, 16 bits, 48kHz, "CD quality." Maximum output level: 1V RMS or 2V RMS. THD+N: 0.009% (line in/line out), 0.05% (BT in/line out), 0.005% (line in/TosLink out), 0.005% (BT in/TosLink out). S/N ratio: 102dB (line in/line out), 103dB (BT in/line out), 105dB (line in/TosLink out), 297dB (BT in/TosLink out). Channel separation: 106dB (line in/line out), 103dB (BT in/line out), 105dB (line in/TosLink out), 297dB (BT in/TosLink out), 364dB (BT in/TosLink out). Dynamic range: 96dB (line in/line out), 103dB (BT in/line out), 97dB (line in/TosLink out), 213dB (BT in/TosLink out). Analog input impedance: not specified. Analog output impedance: not specified. Supplied accessories: 5V, 1A power supply, TosLink optical cable, 3.5mm-to-double-RCA adapter cable, user guide.
**Dimensions** 2.8" (71mm) diameter × 1" (25.4mm) H. Weight: 260gm.
**Finish** Black acrylic with top-panel touch controls.
**Serial numbers of units reviewed** None found, "Made in China." Firmware version: 4.6.412161, then 4.6.415357.
**Price** $99. Approximate number of US dealers: Sold direct from Amazon.
**Manufacturer** Linkplay Technology Inc., 8000 Jarvis Ave., Suite #130, Newark, CA 94560. Web: wiimhome.com.

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see. The Mini's outer simplicity, though, belies a wealth of features. "Turn any audio gear smart" is printed on the user guide cover.

Audio files up to 16/48 can be streamed to the Mini via AirPlay 2, but hi-rez audio up to 24/192 can be streamed to it via Wi-Fi with the WiiM Home app. The app supports Spotify, Tidal, Qobuz, Deezer, Amazon, and many other streaming services, and it features Gapless playback. Moreover, it can stream the same audio to multiple Minis to allow wireless multiroom operation. A Sync function in the setup menu allows the different latencies of the multiple Minis to be compensated for, using the Mini's own microphone. Amazon's Alexa and Apple's Siri can be used for voice control.

An adaptive EQ feature offers not just the usual loudness, treble, and bass controls but also settings for 13 specific types of music as well as one to compensate for small speakers. The user manual describes this feature aptly: "When adaptive EQ is enabled, the music genre information and other tags included in the audio content are used to adjust the frequency in real time—either bringing rich audio to capture every music detail or making human voice clearer in the podcast."

When selecting the analog input, the Mini's top-panel LED glows green, and it converts the analog signal to a 16/48 digital signal. The digitized data can then be directed either to the optical S/PDIF output or to the analog output, where it is converted back to analog with a Burr-Brown PCM5121 DAC chip. (When a 3.5mm plug is inserted into the analog output jack, the digital output is disabled.)

### Setup and headphone listening

Setting up the WiiM Mini was a painless process. I installed the WiiM Home app on my iPhone 11, paired the iPhone with the Mini via Bluetooth, and followed the app's instructions. Using the

## MEASUREMENTS

I measured the first sample of the WiiM Mini with my Audio Precision SYS2722 system,[1] repeating some tests with the second sample. Looking first at the WiiM's analog inputs and outputs, the input impedance was a usefully high 32k ohms at 20Hz and 1kHz, 13k ohms at 20kHz. The analog output preserved absolute polarity (ie, it was noninverting), and the source impedance was a low 33 ohms from 20Hz to 20kHz. The gain was 0.37dB with the fixed gain set to "1V." With the fixed gain set to "2V (Loud)," the gain was 5.8dB at the outputs; that is, an input of 1V resulted in an output of 1.955V.

The analog input offered a frequency response that rolled off rapidly above 21kHz (fig.1), which is due to analog input signals being digitized at a sample rate of 48kHz. The right-channel response (red trace) had a +0.2dB plateau below 2kHz and at the top of the audioband. Channel separation (not shown) was excellent, at >110dB below 1kHz and still 90dB at the top of the audioband. The low-frequency noisefloor (fig.2) was free from power supply–related spuriae, but low-level components of unknown origin were present at 36Hz, 72Hz, and 964Hz.

Fig.3 plots the percentage of THD+noise in the Mini's output against the output voltage into 100k ohms. The fixed gain was set to "2V" for this measurement. We specify clipping voltage as when the THD+N reaches 1%, and the 1% point is reached just above 2V. When repeating this test with the fixed gain set to "1V," the THD+N reached 1% at 1.1V (not shown). Both clipping points occurred when the input level was 1.05V. The distortion in fig.3 lay below the noisefloor, below 1V, and with a 50Hz signal at 2V into 100k ohms (fig.4), the second and third harmonics were the highest in level, at a still very low –87dB and –83dB, respectively. Repeating this test with a 600 ohm load (not shown) both increased the

1 See stereophile.com/content/measurements-maps-precision.

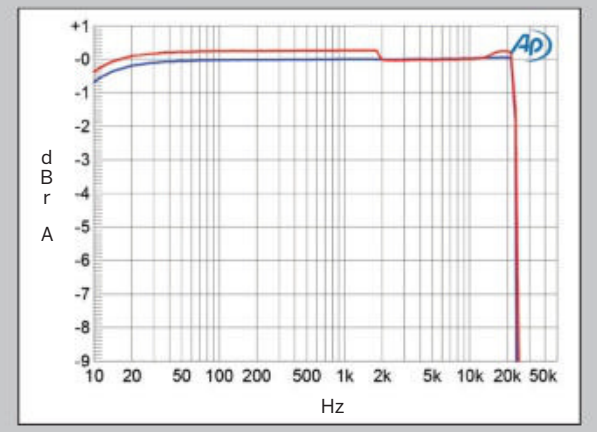


**Fig.1** WiiM Mini, analog input, frequency response at 1V into 100k ohms (left channel blue, right red; 1dB/vertical div.).

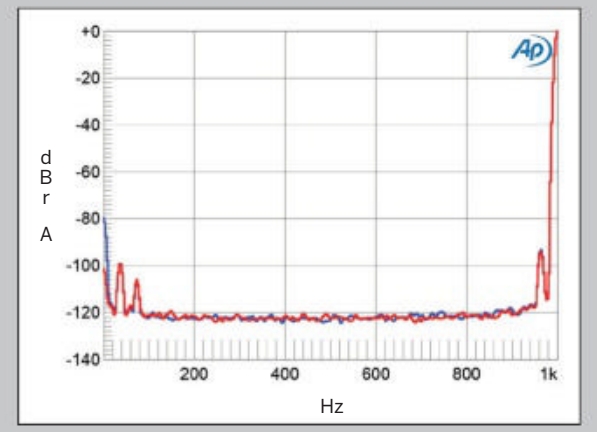


**Fig.2** WiiM Mini, analog input, 2V output setting, spectrum of 1kHz sinewave, DC–1kHz, at 2V into 100k ohms (left channel blue, right red; linear frequency scale).

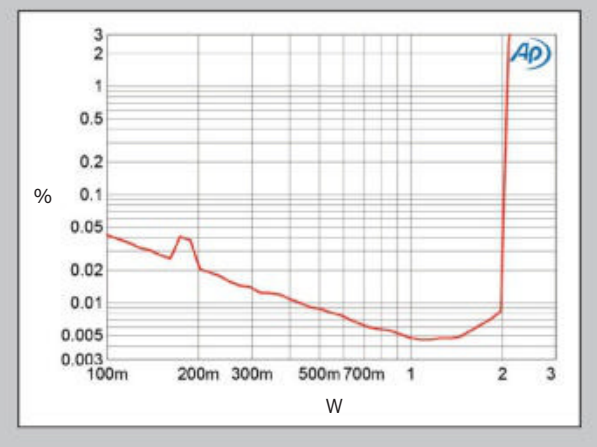


**Fig.3** WiiM Mini, analog input, 2V output setting, THD+noise (%) vs 1kHz output voltage into 100k ohms.

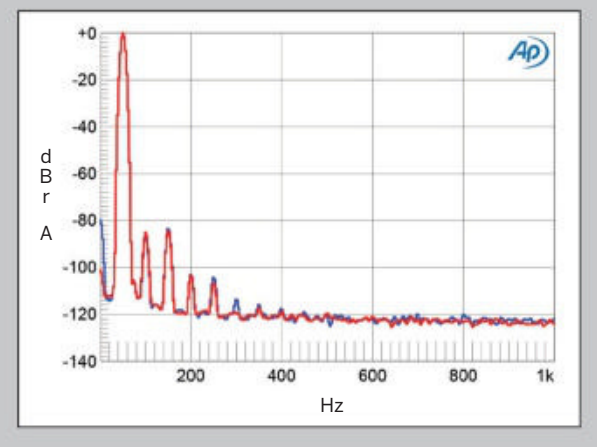


**Fig.4** WiiM Mini, analog input, 2V output setting, spectrum of 50Hz sinewave, DC–1kHz, at 2V into 100k ohms (left channel blue, right red; linear frequency scale).

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app, I logged the Mini into my 5G Wi-Fi network, and once the Mini had updated its firmware (to version 4.6.412161), I entered my login info for Qobuz Studio (24/192) and Tidal. I activated the Mini as an AirPlay 2 device in Roon and was able to connect to it with AirPlay. I was also able to stream YouTube soundtracks to the Mini via AirPlay 2.

I was ready to play AIFF files from my iPhone and iPad music library and found that I couldn't. The manual set me straight on that one: AIFF-C file playback is not supported.

As the Mini's analog outputs have a relatively low source impedance—see the Measurements sidebar—I started by using my high-impedance Sennheiser HD 650 headphones. I first fed audio to the Mini's analog input. I didn't try the Adaptive EQ, as I was interested in the Mini's intrinsic sound quality.

Inspired by Tony Scherman's article on Bonnie Raitt in the June 2022 issue of *Stereophile*, I streamed her new album, *Just Like That …* (26/96 FLAC, Redwing Music/Qobuz), to a Mytek Brooklyn D/A processor from Roon via USB and fed the DAC's single-ended output to the Mini's analog input. I had to set the Brooklyn's volume control relatively low to avoid distortion on peaks. The lows sounded soft and the highs somewhat grainy, but considering that the signal was undergoing successive D/A, A/D, and D/A conversions, the Mini was more listenable than I had expected.

Next, I streamed the Bonnie Raitt album to the Mini from Roon using AirPlay 2. There was now more air in the presentation than when I used the analog input, though the bass was still softened. But, as AirPlay downsamples the original hi-rez audio, I streamed the album from Qobuz at 24/96 audio, using WiiM Home. The

**measurements, continued**

levels of the second and third harmonics and introduced higher-order harmonics in the right channel but not the left. Similarly, the right channel had higher levels of intermodulation products (fig.5, red trace) than the left (blue) when driven with an equal mix of 19 and 20kHz tones at a peak level of 2V into 100k ohms. The higher levels of the products at 28kHz and 29kHz confirm that the analog input is digitized at 48kHz. (Their frequencies are equal to 48–20kHz and 48–19kHz, respectively.)

Turning to files stored on my iPad mini 2 and transmitted to the WiiM Mini via Wi-Fi (using the WiiM Home app), the Mini accepted data sampled at rates up to 96kHz. Fig.6 shows the WiiM's frequency response with data sampled at 44.1 and 96kHz. The responses are flat almost to half the sample rate, before quickly rolling off. The output level at the analog output was 1V or 1.985V, depending on the fixed output level setting, and preserved absolute polarity.

The Mini's impulse response with 44.1kHz data (fig.7) is typical of a linear-phase reconstruction filter, with equal amounts of ringing on both sides of the single full-scale sample. With 24-bit/44.1kHz white-noise data, the filter rolled off rapidly above the audioband (fig.8, magenta and red traces), reaching full stop-band attenuation at 24kHz. However, the ultrasonic noisefloor has an odd, scalloped appearance. The aliased image at 25kHz of a full-scale tone at 19.1kHz (cyan, blue) is only suppressed by 60dB, but more significantly, the noisefloor with this signal is relatively high in level. The harmonics associated with the 19.1kHz tone all lie at around –60dB but have sidebands present at ±1100Hz, as does the fundamental.

Though an increase in bit depth from 16 to 24 with dithered data representing a 1kHz tone at –90dBFS (fig.9) lowered the level of random noise by almost 30dB—the noisefloor with 16-bit data (cyan and magenta traces) is due to the dither used to

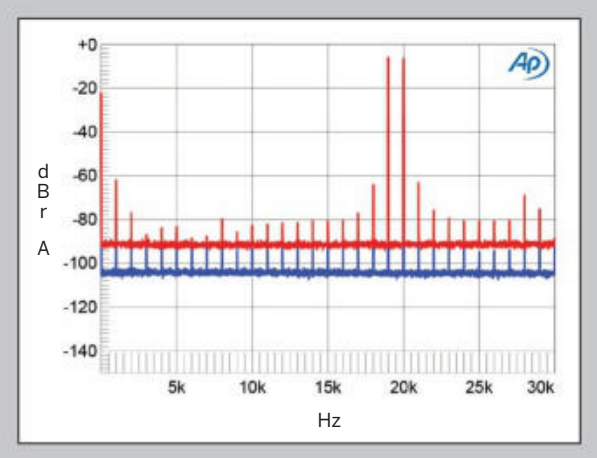



**Fig.5** WiiM Mini, analog input, 2V output setting, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 2V into 100k ohms (left channel blue, right red; linear frequency scale).

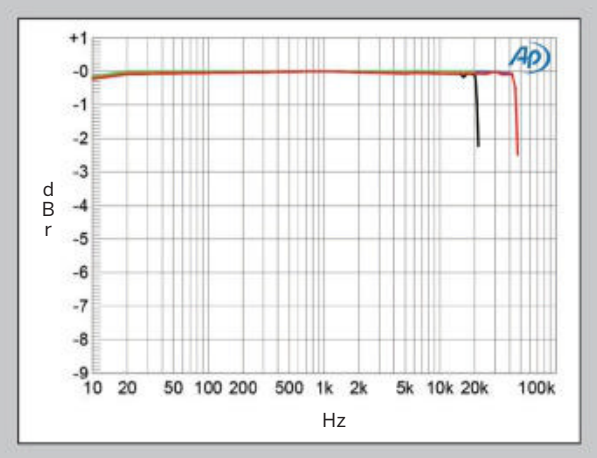



**Fig.6** WiiM Mini, Wi-Fi data, frequency response at –12dBFS into 100k ohms with data sampled at: 44.1kHz (left channel green, right gray), 96kHz (left blue, right red) (1dB/vertical div.).

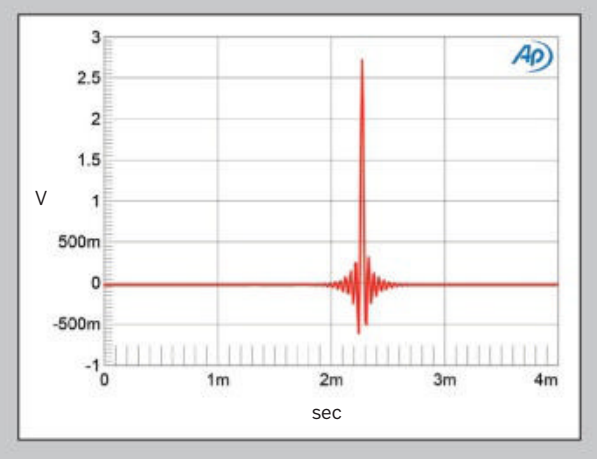



**Fig.7** WiiM Mini, Wi-Fi data, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

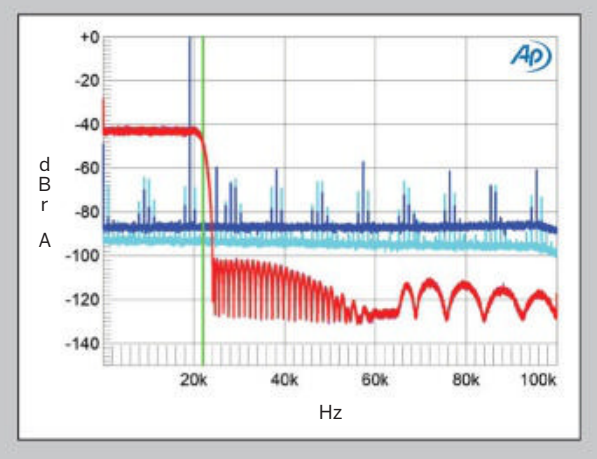



**Fig.8** WiiM Mini, Wi-Fi data sampled at 44.1kHz, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan) into 100k ohms (20dB/vertical div.).

bass now had more subjective extension and leading-edge definition. I next selected the Mini's TosLink output and connected it to the Mytek Brooklyn, so I could listen with my Reference Audeze LCD-X headphones. That's when I ran into problems.

## Problems

The app allows the Mini's S/PDIF output to be set to 16- or 24-bit resolution and to maximum sample rates of 48kHz, 96kHz, or 192kHz. With the S/PDIF output set to 24 bits and 192kHz, I could play 24/96 and 24/192 files from Qobuz with full resolution and bandwidth. However, when I set the S/PDIF output to 24 bits and 96kHz, 24/96 Qobuz files were downsampled to 16 bits and 44.1kHz. If I then reset the S/PDIF rate to 192kHz, the 24/96 files were still downsampled. (I made sure that the Qobuz interface in the WiiM Home app was set to allow "HiRes up to 192kHz"; this was confirmed by WiiM as a firmware bug, which they promised to fix in their next update.)

Power cycling the WiiM Mini solved this problem—except that it recurred when I tried playing a 24/48 Qobuz file after playing a 24/96 file. The problem was still there when I then played 24-bit WAV files from my iPad: They were truncated to 16-bit resolution until I power-cycled the WiiM Mini again. (I determined sample rate and active bit depth using my Audio Precision's digital-input analyzer.)

There was either some hardware problem with my sample or, more likely, a firmware issue. Editor Jim Austin asked Linkplay's Linda Kim to send me a new sample; she sent two in case I wanted to try the Mini's multiroom capability. (I didn't test this, however.) I unpacked one of them, powered it up after installing the latest version of the WiiM Home app on my iPad, and logged it into my 5G Wi-Fi network. As I expected, the Mini updated its firmware—this time to a newer version (4.6.415357), dated April 29, 2022. I made sure that the app's Qobuz account was set up to allow hi-rez playback, set the TosLink output to handle data up to 24/192, selected the Bonnie Raitt album, and pressed Play.

## Problem-free listening

All was well. The Mini's analog output reproduced Bonnie Raitt with the same overall quality that I had experienced with the first sample of the Mini, but now the TosLink output carried 24/96 data. Next up was "Don Juan," a track from the June 2022 issue's Recording of the Month—a collection of works by Richard Strauss

**measurements, continued**

encode the signal—the 1kHz signal has disappeared with 24-bit data (blue, red). This confirms that the DAC resolution is limited to 16 bits, as described in the specifications. When I played a full-scale 1kHz tone, the second harmonic was the highest in level in the analog output, at just –90dB (0.003%, fig.10).

Fig.11 shows the spectrum of the Mini's analog output when it was fed 16-bit J-Test data from my iPhone 11 with the WiiM Home app. The odd-order harmonics of the undithered low-frequency, LSB-level squarewave lie close to the correct levels, indicated by the sloping green line. The central peak that represents the high-level tone at one-quarter the sample rate has some spreading visible at its base, implying the existence of low-frequency random jitter. The WiiM Mini's TosLink output was bit-accurate. I examined the amount of timing uncertainty—jitter—in the TosLink output using my Audio Precision SYS2722 system's digital oscilloscope function. I overlaid successive snapshots of the Mini's digital output, taken over a 60s time window, to show what's called an "eye pattern." All the pulse transitions in the datastream should overlay one another to produce an image of a wide-open "eye," with just one trace visible. This was the case with the Mini (fig.12) with the original 44.1kHz data plotted over one "unit cycle." The eye is wide open, with no blurring of the leading and trailing edges. The average jitter level, assessed with a 50Hz–100kHz bandwidth, was a relatively low 729.7 picoseconds, though with typical music recordings it averaged 1.6 nanoseconds.

I was pleasantly surprised by the measured performance of the WiiM Mini's analog input and output. My experience of other extremely low-priced D/A processors had lowered my expectations, and while the analog output is limited to 16 bits, the only significant issue I found was the higher distortion at high frequencies and into low impedances.—**John Atkinson**

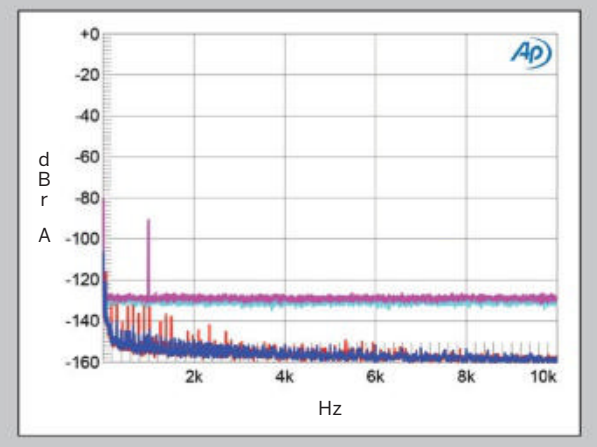



**Fig.9** WiiM Mini, Wi-Fi data, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).

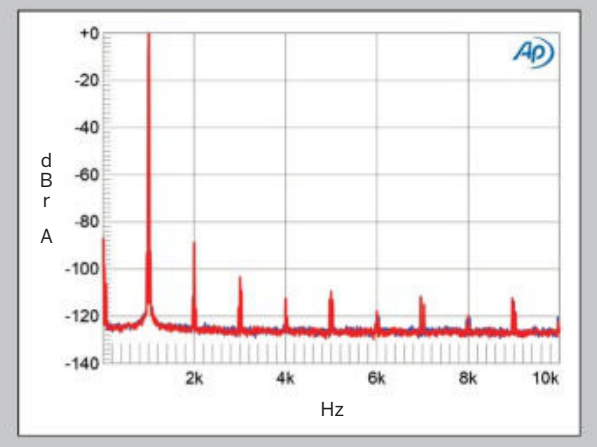



**Fig.10** WiiM Mini, 24-bit Wi-Fi data, spectrum of 1kHz sinewave, DC–10kHz, at 2V into 100k ohms (left channel blue, right red; linear frequency scale).

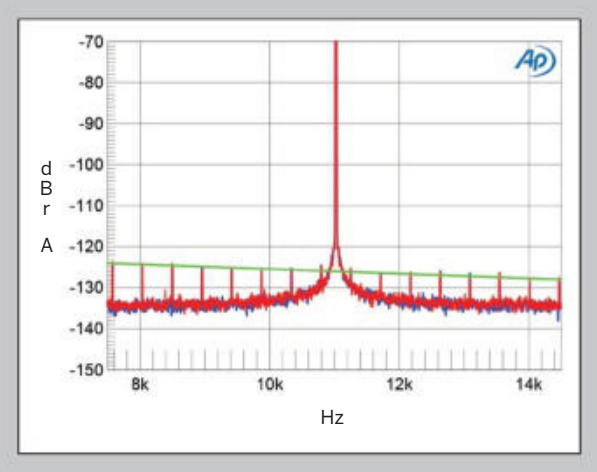



**Fig.11** WiiM Mini, 16-bit Wi-Fi data, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

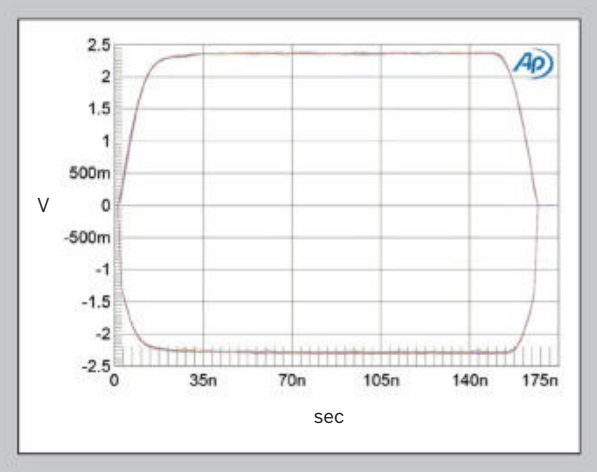



**Fig.12** WiiM Mini, 16-bit, 44.1kHz, J-Test Wi-Fi data, eye pattern of TosLink output (±2.5V vertical scale, 175ns horizontal scale).

conducted by Andris Nelsons (24/96 FLAC, DG/Qobuz). The orchestral sound was lush, and I couldn't hear any difference between the signal fed to the Mytek via Wi-Fi from the WiiM Mini or via USB from Roon.

### The Mini as a network bridge

I retrieved my Mark Levinson No.30.6 from storage and connected the Mini's TosLink output to one of its TosLink inputs. Since the Levinson can't accept S/PDIF data sampled at 192kHz, I used the WiiM Home app to set the Mini's S/PDIF output resolution to 24 bits and 96kHz. And as it doesn't have a volume control, I set the Mini's output to variable volume so I could connect the No.30.6 directly to the Parasound monoblock amplifiers.

I first connected the Mini's TosLink output to the Mytek Brooklyn, to make sure all was working correctly. With the Mini's S/PDIF output set to 24/96, Bonnie Raitt played with the correct resolution and sample rate. However, while Jackson Browne's classic *Running on Empty* (24/192 FLAC, Asylum Records/Qobuz) was downsampled to 96kHz as expected, the word length (as revealed by the Mytek's display) was reduced to 16 bits. This truncation will likely be addressed in the next firmware update, but for now, I stuck with files sampled at 96kHz or lower for playback with the Levinson.

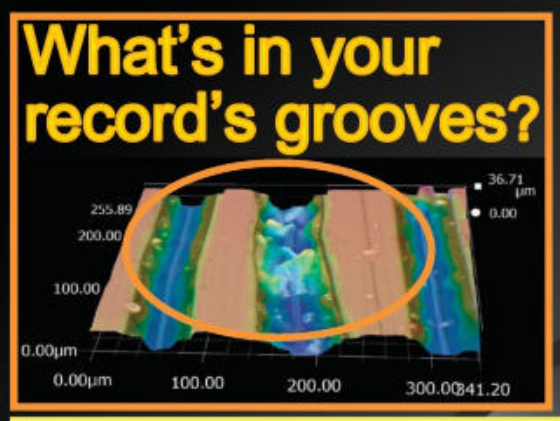
I had forgotten with how much drive and low-frequency authority the No.30.6 endowed playback. But compared with my current digital reference, the MBL N31, the soundstage had somewhat less depth; the highs a touch more grain. Even so, the WiiM Mini dragged the Levinson DAC into the 21st century.

### Conclusion

The WiiM Mini's analog input and output are serviceable, but it's the ability to output hi-rez audio data from its TosLink output that gets this bargain-priced product a recommendation from me. But to ensure bit-perfect playback, unless you are using a D/A processor that is restricted to sample rates of 96kHz or lower, be sure to set the Mini's S/PDIF output to 24/192. And to make sure the device is working at its best, be sure to download the latest firmware update. ■

### ASSOCIATED EQUIPMENT

**Digital sources** Roon Nucleus+ file server, MBL N31, Mark Levinson No.30.6, and Mytek Brooklyn D/A processors, iPhone 11, iPad mini 2, Netgear Nighthawk router.
**Power amplifiers** Parasound Halo JC 1+ monoblocks.
**Loudspeakers** Q Acoustics Concept 50.
**Headphone amplifier** Mytek Brooklyn.
**Headphones** Sennheiser HD 650 with Mini, Audeze LCD-X with Mytek.
**Cables** TosLink: AudioQuest Vodka. Interconnect: AudioQuest Wild Blue. Speaker: AudioQuest Robin Hood. AC: AudioQuest Dragon Source & High Current, manufacturers' own.
**Accessories** Target TT-5 equipment racks, Ayre Acoustics Myrtle Blocks; ASC Tube Traps, RPG Abffusor panels; AudioQuest Niagara 5000 Low-Z Power/Noise-Dissipation System (amplifiers) and AudioQuest Niagara 1000 Low-Z Power/Noise-Dissipation System (source components). AudioQuest Fog Lifters cable supports. AC power comes from two dedicated 20A circuits, each just 6' from breaker box.
**Room** 20' (left side), 25' (right side) × 16' × 8'. —John Atkinson

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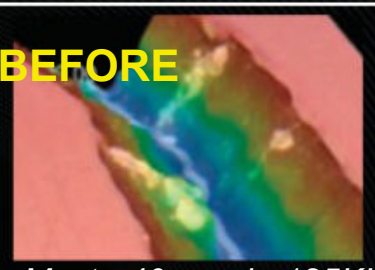
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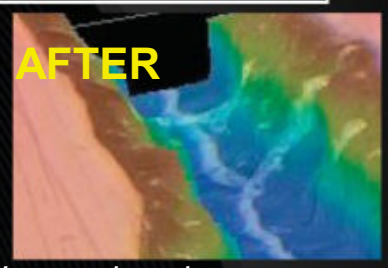

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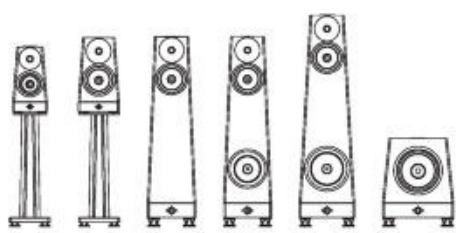

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# Luxman LMC-5

## MOVING COIL PHONO CARTRIDGE

Since 1925, Japan-based Luxman Corporation has manufactured high-quality integrated amplifiers, preamplifiers, power amplifiers, phono stages, turntables, and, more recently, DACs and CD players. But it has been 40 years since Luxman introduced a new phono cartridge; the last one was the LMC-2 in 1982, released just after 1981's LMC-1. That dry period ended with the introduction of the Luxman LMC-5 ($2695).

Anodized in snazzy Luxman red, branded with a laser-etched, '70s-looking, flower-powered "L," and backed by almost 100 years of high-fidelity expertise, the aluminum-body LMC-5 is worthy of close inspection.

40 is a nice, round number, but that's mostly a coincidence. "LMC-5 development began several years ago with its launch timeframe planned to coincide with the introduction of new Luxman turntable models," explained John Pravel, Luxman America's VP of sales. But the cartridge was ready first. "The global pandemic situation intervened," delaying the introduction of those turntables until later this year.

So, obvious question: What happened to the LMC-3 and LMC-4? "Number 3 is reserved for a future project," Pravel told me. "Luxman product planners do not favor even numbers, with the number '4' especially unpopular, a cultural/language taboo throughout much of Asia." Hence, LMC-5.

### Design

At the business end of the LMC-5, Luxman employs a Shibata stylus, which is affixed to a low-mass, 0.5mm-thick aluminum-pipe cantilever with both press fitting

and an adhesive bond using epoxy resin. The cart's 4-nines, high-purity copper-coil windings consist of urethane-enameled piano wire 30µm thick.

The LMC-5 motor incorporates a "cross-mounted iron core with the left and right coils wound symmetrically for superior channel separation," a press release stated; the specified channel separation is 28dB. "Because the coil and [samarium/cobalt] magnetic field are uncommonly compact, the cartridge is highly resistant to external noise."

Luxman suggests a vertical tracking angle of 25°, which the company says yields a stylus rake angle of 0° (or 90°). The recommended tracking force is 2.2mg, the output voltage is 0.4mV, and the reported frequency response is 10Hz–35kHz. The recommended load impedance is 40 ohms—2.5 to 10 ohms if you're using a step-up transformer. Dynamic compliance is 8 × $10^{-6}$cm/dyne at 100Hz, which is moderately low; the LMC-5 weighs a modest 8.6gm, so a tonearm of reasonably high mass will make the best match.

The LMC-5 was designed by a two-man team—engineers Mr. Hagiwara and Mr. Nagatsuma—with a very specific goal. "The "great difficulty that many phono cartridges have [is] correctly reproducing the full scale, dynamics, and harmonic overtones of a concert grand piano," Mr. Hagiwara said, quoted in a PR document prepared by Pravel. That challenge drove the Luxman LMC-5 development team toward realizing its goal, the document concludes.

The LMC-5's body underwent several iterations of shape and material before the final design was settled on. Luxman chose an open-body design for the LMC-5 because "the coil and cantilever assembly of [closed-body designs] can behave like a microphone, picking up reflected sound from the vinyl record surface. With less enclosure, [there is] less potential for sound coloration," Pravel added. An aluminum alloy pipe was chosen as the cantilever material, Pravel said, because more exotic materials—ruby, sapphire, boron, beryllium—yield an "accentuated, hi-fi sound.

## SPECIFICATIONS

**Description** Moving coil stereo phono cartridge. A6063 aluminum body with threaded screw holes. Internal impedance: 4.7 ohms (1kHz). Tracking force: 2.1–2.3gm (2.2gm recommended). Output voltage: 0.4mV (1kHz, 3.54cm/s). Frequency range: 10Hz–35kHz. Channel separation (at 1kHz): 28dB. Recommended load impedance: 40 ohms or more; with SUT, 2.5–10 ohms. Dynamic compliance: 8 × $10^{-6}$cm/dyne (100Hz). Stylus: Solid diamond/Shibata stylus. Stylus rake angle: "0°" (square, 90° angle). Cantilever: 0.5mm aluminum. Vertical tracking angle: 25°. Magnet: samarium-cobalt magnet BH20. Coil: 30µm UEW.
**Dimensions** 17.0mm W × 18.3mm H × 21.3mm D (excluding terminals). Weight: 8.5gm.
**Serial number** E11100218.
**Price** $2695. Approximate number of dealers: 75. Warranty: Two years when installed and aligned by an authorized dealer.
**Manufacturer**
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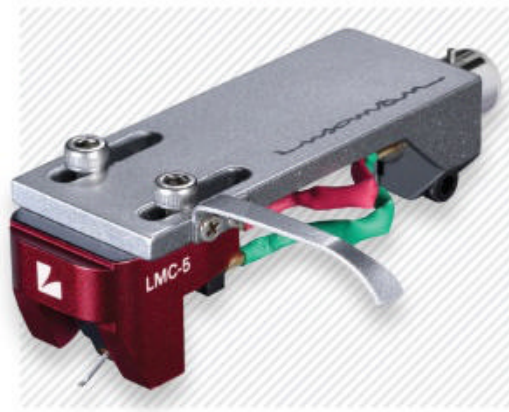
Luxman favored the sincere, neutral sound quality of aluminum."

For listening tests, Luxman mounted LMC-5 prototypes onto an SME tonearm, situated on a Luxman PD-171AL turntable (armless version, with custom SME tonearm-mounting base). The rest of the assessment system was Luxman's E-250 phono stage, C-900u or CL-1000 preamps, and M-900u, MQ-88u, and MQ-300 power amps. Reference speakers were Focal, among others.

LMC-5 cartridges are assembled by a five-person team employed by an unspecified but well-known Japanese cartridge manufacturer.

## Setup

The LMC-5 arrived in a small cardboard box enclosed in a flexible plastic sleeve. Within the package, a smaller leather box held owner's manual, cartridge, stylus protector, six stainless steel screws, two nylon washers, and an Allen key.



Using the body's convenient threaded holes, I mounted the LMC-5 to the headshell of my Kuzma 4Point tonearm, attached to my Kuzma Stabi R turntable. I used a Feickert Next Generation Universal Protractor to align the cartridge and a Riverstone Audio electronic scale to set the tracking force to the recommended 2.2gm. The cartridge's output was boosted by a Sculpture A Mini Nano SUT, which output its higher voltage into the MM inputs of a Tavish Audio Design Adagio phono stage. A 2m RCA pair of Analysis Plus Silver Apex cables connected the phono stage to the inputs of my Sugden LA-4 preamplifier, then on to a Pass Labs XA25 power amplifier via a pair of Triode Wire Labs Spirit II (RCA) cables. A 10' pair of Analysis Plus Silver Apex cables connected the Pass Labs amplifier to my reference DeVore Fidelity Orangutan O/96 loudspeakers.

## Listening

I was impressed with the rich tone and pure, detailed, hugely illustrative sound of the LMC-5, right out of the box. Break-in made it better. Lovely clarity and openness in the upper midrange and treble resulted in textural shading, touch, and illumination of inner detail. Snare drums, cymbals, guitars, wind instruments, and female voices were bathed in a generous glow, paced by a sense of resolution and ease. The cart, though, had abundant transient snap when it was needed. Nothing about the LMC-5 was etched, strained, or ear-biting; I heard only richly toned, organic, well-textured sound. The LMC-5 sounded *whole*, weaving together ambient cues with instrumental textures and tones into a well-sorted, well-scaled soundstage.

The LMC-5's recreation of acoustic bass, massed strings, and bass-region drums was smooth and strong. The tonality and projection of Philly Joe Jones's toms on Art Pepper's *Meets the Rhythm Section* (Original Jazz Classics OJC-338) was immaculate, the best I've heard. Yet, the LMC-5 was more about sweetness than slam. Bass notes were warm and nicely sized but lacked the last degree of grip, punch, and extension. Top-to-bottom coherence was the LMC-5's most salient characteristic, alongside a refined treble and sweetly transparent midrange. Tonal purity, speed, refinement, and resolution were the LMC-5's take-home message.

Microdynamics and microdetail were also top notch through the LMC-5. The cart highlighted surface noise on some LPs but also revealed such minutiae as the crisp, airy vibrations of wire snares on the bottom head of a snare drum, tiny changes in air pressure that made well-recorded vocalists seem real, and subtle inflections of air pressure within saxophones, which helped carve John Coltrane's and Art Pepper's saxophones out of space.

On "You'd Be So Nice to Come Home To," the quartet of Pepper (alto saxophone), Red Garland (piano), Paul Chambers (acoustic bass), and drummer Jones blasted out a big soundstage with near-3D, physical images driving the music. The sound was open, clean, snappy … it sent me! The midrange to treble of Pepper's alto horn and brushes on snare drum were *alive*. The soundstage was deep, populated by fleshy, human images that had transient snap, force, and energy. The LMC-5 enabled a nearly live performance in my small listening warren, the cart defying room size to recreate spatial splendor and physical immediacy.

The LMC-5 delivered a feast of textures on the second movement of Joseph Haydn's Op.74 No.1 in C Major, performed by the Auryn Quartet and recorded using a pair of Neumann CM3 microphones (*Das Mikrofon*, Tacet L17). The quartet's string tone was penetrating, forceful, deliberate. The sound was not overly lush or soft but rather truthful and resolved, explicit, and 3D-realistic. The LMC-5's ability to extract detail in a musical, nonanalytical fashion consistently impressed.

The Luxman performed similar feats with Floating Points' electronic reverie, *Crush* (Ninja Tune ZEN259); the intricate synth tones, odd gurgles, and bubbling rhythms sound like angry frogs mating, all tough, stinging textures and edgy beats.

The LMC-5 is a detail and texture king. It never punctured the ears or the senses. It straddled a perfect divide between rich tone and silken textures within a big, deep soundstage. The LMC-5 was never forward, but it was direct.

Playing the same records on my Thorens TD 124 MKII turntable with Jelco TS-350S MKll tonearm and Ortofon SPU Classic G MkII cart was an entirely different experience. The soundstage was bigger, the attack was softer, and instruments were less well defined. The sound was pleasing, but it lacked the purity and resolution of the Kuzma/Luxman combo.

Exchanging the LMC-5 for my EMT TSD 15 on the Kuzma produced a different sound, but it was less profoundly different. The EMT on the Kuzma sounded less supple, but it added bass heft, touch, and grip. The EMT was less rich but had a more compact, forceful sound and was slightly forward by comparison. Textures were more visceral and knotty than silken. The LMC-5 brought the honey, the EMT the salt.

## Conclusion

$2695 is a sweet spot in moving coil cartridge prices. You've left the sub-$1000 garage and are headed toward Valhalla-like terrain where reality and color begin to surpass imagination.

On *Stereophile*'s Recommended Components list, there's a hole at this level. The EMT TSD 15 slides in at $1950. The Ortofon SPU Wood A ($2519) and Ortofon Cadenza Black ($2879) are priced slightly higher; the DS Audio DS-E1 optical cartridge costs $2750 with its essential equalizer. The Luxman LMC-5 moving coil phono cartridge strides into this company like Wyatt Earp hitting Tombstone, ready to rumble. It made my records sing. The LMC-5 is a superb product from a historic audio company that continues to push the sonic envelope into the future. ■

estelon

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# REVINYLIZATION

BY SASHA MATSON

**THIS ISSUE:** Sasha Matson is a teenager again as he listens to the new UHQR *Are You Experienced* from Chad Kassem and Analogue Productions.

## Can you relive the experience?

Those of you old enough to have heard it when it was new will recall when you first experienced the music of Jimi Hendrix. I was 13, in 1967, when I came home after school with a friend bearing an LP of the just-released US Reprise Records pressing of *Are You Experienced*. My dad had a floorstanding, monophonic record player. He'd built some of the parts of himself. Somehow, we got the output from that player plugged into my Vox guitar amplifier, the kind the Beatles used on their US tours. My parents weren't home, and we cranked that thing up as loud as it would go. I don't even recall which friend I was with, but boy do I recall that sound! I've heard the album many times since then, but it has always paled by comparison.

Fast-forward. We are well past the Golden Anniversary of the first release of *Are You Experienced*, a cornerstone, era-defining album with a tangled history of formats and editions. Now, in 2022, from Chad Kassem's Analogue Productions, we have a no-expense-spared, Ultra High Quality Record (UHQR), 200gm, 33 1/3 stereo LP, remastered by Bernie Grundman, with "remastering supervision by Janie Hendrix and John McDermott for Experience Hendrix, LLC," pressed on Clarity Vinyl on a manual Finebilt press at Quality Record Pressings.

This *Are You Experienced* was pressed. Packaging is luxe, as in all the AP UHQRs. Each record comes in a deluxe hardcover slipcase with a new, 20-page booklet, a certificate signed by Kassem, and a copy of the LP in a numbered gatefold cover. Mine is No.001382 out of a pressing of 20,000. That's a lot of copies for an audiophile reissue.

The initial British LP release, May 1967 from Track Records, was mono. Reprise Records RS 6261, released in August 1967, was remixed, in stereo, by Eddie Kramer. The sources for mixing were the four-track session tapes, recorded in three London studios over a five-month period. When Kramer came onboard, he began recording Mitch Mitchell's drums in stereo, using a third track for bass, with rhythm guitar parts on a fourth. These four tracks were "premixed" over to two tracks on a second four-track machine, leaving tracks 3 and 4 open for lead guitar and vocals. Extensive redos and overdubs were done during the 5-month recording period. There's a lot of documentation out there about the sessions; particularly telling are the noise complaints the recording studios received. The music sounds loud because it *was* loud. Limiting and compression would have been required.

**When Jimi leans in, as he does on "Foxy Lady," it doesn't just sound like he's bending a string; it sounds like he's tying his guitar into knots.**

The first thing on the minds of audiophiles into vinyl reissues is, what was the source? Kassem's point-blank answer: "Bernie Grundman remastered from the original master tape for this edition." Okay then.

Analogue Productions and a few other vinyl-oriented labels are indeed pursuing sonic excellence with their reissues. Done right, this requires attention to every facet of the audio and physical-media production chain. My new copy of *Are You Experienced* is immaculately flat—a fully flat profile is one of the virtues of the Clarity Vinyl process—and visually transparent, with a well-centered spindle hole. Surface noise is almost nonexistent, contributing to outstanding detail and texture. Those black backgrounds viscerally enhance the huge dynamic range of this recording and the resulting impact.

I did a three-way vinyl comparison: my original Reprise stereo copy from 1967, the 2010 stereo version remastered by Eddie Kramer, and this new UHQR issue. The tracks on *Are You Experienced* vary in the amount and depth of bass due to choices made during recording and mixing. On this new UHQR LP, when the low end is there, it's just beautiful—as at the beginning of "The Wind Cries Mary." Another big winner is the sound and definition of Mitch Mitchell's drums; his jazzy attack on "Third Stone from the Sun" is a shining example. When Jimi leans in, as he does on "Foxy Lady," it doesn't just sound like he's bending a string; it sounds like he's tying his guitar into knots.

*Are You Experienced* is the fifth release in the UHQR series; to date, three out of five are from Hendrix. The only other one I own is the much-praised *Kind of Blue*. I'm all in for praising that, too: I have never heard that album sound so good. So it is now with *Are You Experienced*.

You want a good seat at that show? A good bottle of wine with dinner? It will cost you, and so will this record ($125). Is it worth it? For me, absolutely. On the system I have now, with this pressing, I can experience at least a heavy echo of the energy I felt when I first encountered the album all those years ago.

We all have regrets. One of mine is not having heard Jimi perform live when I had the opportunity. On his last tour, in 1970, he played the Berkeley Community Theater, better known to me back then as my high school auditorium. I could have gotten on my bicycle and pedaled there that night. Jimi was playing great, and Mitch Mitchell was back playing drums where he belonged.

By the time we graduated, in 1971, Jimi had passed. Seniors were given a T-shirt with his picture on it. The caption read, "The Soulful Class of 1971."

For me, it's not a matter of liking or not liking this music. It's in my blood, part of who I am. ■

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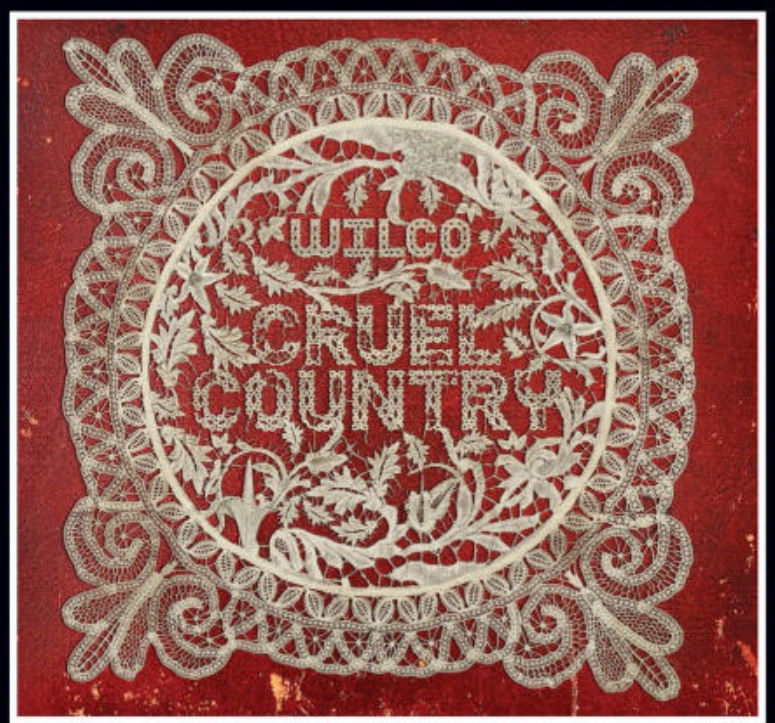
# RECORD REVIEWS

EDITOR'S PICK

## RECORDING OF THE MONTH




**WILCO**
*Cruel Country*

dBpm (24/96 stream, Qobuz; also available as 2CD, 2LP). 2022.
Jeff Tweedy, Tom Schick, prods.; Tom Schick, eng.
**PERFORMANCE** ★★★★½
**SONICS** ★★★★½

The cover art for Wilco's finely hewn double album *Cruel Country* resembles a hand-stitched doily or the kind of patch you might have seen sewn onto the back pocket of a pair of vintage faded jeans circa 1978. It's appropriate: Wilco's music has long been a patchwork, piecing together the scope and potential of American music for the band's nearly 30 years.

*Cruel Country*, Wilco's latest, is anything but cruel: it's a long-form love letter to an American artform, specifically the one described by the title's second word.

The songs and sounds produced by this Chicago-bred sextet over many concerts and albums have often approached country music, even caressed it. On this album, Wilco's 12th made in the studio, frontman/singer/songwriter Jeff Tweedy has doubled down on country, capitalizing the "C." "Wilco," Tweedy said, quoted in the press notes, "is digging in and calling it Country." Country, Tweedy added, "has always been the ideal place to comment on what most troubles my mind."

Tweedy and longtime coproducer Tom Schick, who also engineered these sessions, have filled the 77 minutes of *Cruel Country* with some of the best of what has come to be called Americana: a *Sweetheart of the Workingman's Highway 61 Rodeo* blend for the 21st century. *Cruel Country* is also a blend in a different way: Before they started recording, the Wilco camp decided to corral the six bandmembers face to face, recording live off the floor at The Loft in Chicago, the band's own studio. Wilco hasn't recorded this way, at least not to this extent, since May 2007's *Sky Blue Sky*. Each track was culled from live takes with minimal overdubs: as Tweedy colloquialized, "together with a leaky drum booth, and no baffles" (just the way I happen to like it, truth be told). This eyeball-to-eyeball studio intimacy leaks from *Cruel Country*'s every pore.

*Cruel Country* feels like an album that should be experienced on vinyl, but supply-chain issues pushed back the two-LP version into the fall. Fortunately, the 24/96 Qobuz stream is a fine way to experience the double album's 21 songs. (*Cruel Country* is a double album in both common physical formats; on streaming services, it's presented as 21 consecutive tracks.)

The opening track, "I Am My Mother," sets the sonic table. Tweedy's loose-strung acoustic guitar riffs burrow in the right channel, Mikael Jorgensen's piano and Pat Sansome's counter electric guitar lines play over to the left, Nels Cline's lap steel nestled a little farther back and on the right. Tweedy's reedy vocals ride the open trail up the middle: "I've kicked the can / Into a dead end," he intones, but the accompanying music is anything but dull or withering.

In "Ambulance," resigned breaths, rustling instruments, and fidgeting bodies lay the groundwork before the opening note-picking and acoustic guitar chording. The slight echo on Tweedy's vocals draws attention to the production, but his whispery, soothing voice still comes across as intimate, like he's leaned in close to share a confession.

More than one extended jam sequence suggests how these *Country* songs are likely to be presented live—Wilco is already touring the album—for example, the intertwined noodling in the middle of "Birds Without a Tail / Base of My Skull" and the last two-plus minutes of "Many Worlds," which slow-builds until it fades away. It's easy to imagine tracks like these extending far longer live. Around the time this issue hits newsstands, Wilco will be playing Cedar Rapids, Iowa.

The ironically dubbed, palate-cleansing "Falling Apart (Right Now)" is purebred midnight rockabilly, while "A Lifetime to Find" features a dobro solo from Cline, plus Tweedy's self-admonition, "O' Jeff / Don't obsess." (It's too late for that advice, I'm thinking.) The bleakness of the album's closer, "The Plains," accentuates the cruelty of our century—which is where the first C-word in the title comes in—with rushing wind, evoking tumbleweeds swirling around the band.

An epic treatise on America, the good and the grim, *Cruel Country* offers a rowdy cavalcade of homegrown sounds captured live in the studio, all nice and cocoonlike. Wilco's six country gentlemen achieve a sort of spiritual/artistic phase lock, gathering the sonic and historical threads of our at-risk American fabric into a quilt that couldn't help but make their mamas proud.—**Mike Mettler** ■

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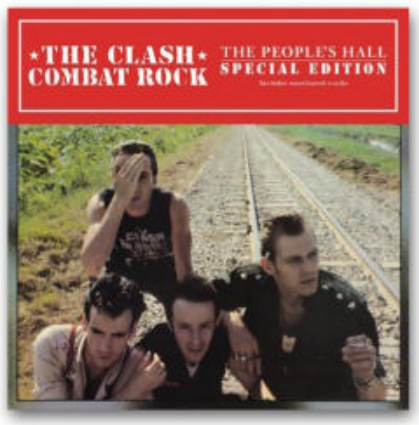


### THE CLASH
*Combat Rock + The People's Hall*

Columbia 19439955131 (LP). 1982/2022. The Clash and Glyn Johns, prods.; Andrew Davitt, the Clash, and Tim Young, engs.

**PERFORMANCE** ★★★★½
**SONICS** ★★★★½

When you've sung "Ha! You think it's funny, turning rebellion into money!," it can be problematic when you start scoring major hits. With the Clash, it wasn't funny; their success increased tensions and led to the band splitting up. Music labels rarely have such qualms, and 40 years later *Combat Rock* gets the deluxe treatment, with 1 ½ sides of *The People's Hall*, with rarities and previously unreleased material.

The remastering gives the mix slightly more oomph, but a great album remains a great album. Of more interest are the extras. What, though, is this trend of half an album? One side of *The People's Hall* is blank. Couldn't they find anything to fill it? *Combat Rock* was first mixed as a double album, by Mick Jones, with longer songs; Glyn Jones was hired to shorten them. What happened to the originals? Saved for a rainy (Record Store) Day?

The Clash being the Clash, there's an occasional misfire. "Outside Bonds" is a recording of people talking about bonds. Outside. No doubt, it was intended as a political statement, but Noam Chomsky it ain't. Still, the band's desire to take risks and explore styles is a joy. Sometimes they mix styles in one song, as on the skiffle-meets-Motown instrumental, "He Who Dares or Is Tired." In "The Fulham Connection (aka The Beautiful People Are Ugly Too)," the boys try out bossa nova, west London style.

Mick Jones was an early rap proselytizer; one of the standout tracks is graffiti artist Futura 2000's rap over Simonon's bass on "Futura 2000." Alternative versions can sometimes be a mistake, but the funkier "This Is Radio Clash," with different lyrics, and the dub-tinged "Know Your Rights" are, for me, better than the originals.

Taken together, the 2 ½ sides are a wonderful addition to the Clash canon. Once again, the Clash's rebellion has been turned into money, but it's fun.**–Phil Brett**

### WET LEG
*Wet Leg*

Domino Records. WIGLP496 (LP). 2022. Dan Carey, Jon McMullen, prods.; Alexis Smith, Joshua Mobaraki, engs.

**PERFORMANCE** ★★★★★
**SONICS** ★★★★½

Great debut albums that grab the listener and don't let go are members of an elite club. Wet Leg has joined it, with a gold membership card. This is a thrilling album, with *fun* tattooed across it.

The band was formed by long-time friends, guitarist/vocalists Rhian Teasdale and Hester Chambers. The two women are the group's heart, soul, mind, and sense of humor.

Coming from the Isle of Wight may have something to do with how fresh they sound. Even allowing for its famous festival, the little island on the south coast of England is hardly known as the center of rock'n'roll—quiet family holidays in trailers maybe, but not R'n'R. There was no big scene on the island in need of a style or outlook.

Here, the two women are joined by Henry Holmes (drums), Michael Champion (bass), and Dan Cary (synths). The latter also produces, and his production, like his work with Goat Girl, is unfussy; he lets the band play and do its thing.

The key thing is exuberance. It's an ever-present contributor, even on the melancholier numbers such as "I Don't Wanna Go Out." Most of the tracks, though, are upfront and bouncy, to be enjoyed, sung along to, and danced to. Songs such as "Chaise Longue" and "Oh No" glory in the joy of pop, never taking themselves too seriously. In this respect, they remind me of the Undertones. But, also like that group, that doesn't mean they're not to be taken seriously. The lyrics might dwell on the mundane, like this, from "Too Late Now"—"I don't need no radio, no MTV, no BBC / I just need a bubble bath to send me on a higher path"—but they tell the story of real life. And real life is rarely pink Cadillacs.

If *Stereophile* had a ranking for Life-Affirming, *Wet Leg* would get a 5. I'll give it a 5 anyway, for "Performance."**–Phil Brett**

## JAZZ

### JOHN SCOFIELD
*John Scofield*

Scofield, electric guitar, looper

ECM 2727 (auditioned in 16/44.1 WAV, available as CD, LP). 2022. Manfred Eicher, exec. prod.; Tyler McDiarmid, eng.

**PERFORMANCE** ★★★★½
**SONICS** ★★★★★

In a distinguished half-century jazz career, John Scofield has been everywhere, played with everyone, and done everything. But he has never made a solo guitar record. Until now.

This eponymous release is his most intimate, most introspective album, though it's not entirely mellow. Scofield has roots in rock and country, and on his first solo record, he sometimes rocks out and sometimes gets twangy. He uses a looping device for chordal and rhythmic accompaniment. On Buddy Holly's "Not Fade Away," the rhythm track twitches with the song's famous Bo Diddley beat—but this is a unique version, complicated by surprising inner details that could only come from a jazz improviser. "You Win Again," by Hank Williams, is another interpretation that requires an artist at home in more than one world. Its aching sadness and resignation are as country as it gets—but its perspective is expanded by the asymmetrical pauses, asides, passing chords, and bent notes Scofield applies to the song.

Scofield elaborates some melodic originals beautifully, like "Honest I Do." There are some bright, quick celebrations from the American Songbook, like "There Will Never Be Another You" and "It Could Happen to You." But the most enduring moments are when Scofield allows the natural rapt atmosphere of a solo guitar album to prevail. "My Old Flame" is the simplest and shortest piece, with no looping device, but it is a patient, complete dissertation on how long-lost love can hover on the far reaches of memory. As for "Danny Boy," if you are not melted when a master storyteller lingers over one of the world's tenderest, most beloved stories in song, you have a heart of stone.

The sound is brilliant. Engineer Tyler McDiarmid brings Scofield's electric guitar to rich, raw, ringing life.**–Thomas Conrad**

## JAZZ

### FABIAN WILLMANN TRIO
*Balance*

Willmann, tenor saxophone; Arne Huber, bass; Jeff Ballard, drums; Asger Nissen, alto saxophone

CYH 0002 (CD, available as download). 2022. Patrik Zosso, Fabian Willmann, Sarah Chaksad, prods.; Patrik Zosso, eng.

**PERFORMANCE** ★★★★★
**SONICS** ★★★★★

The West Coast style of jazz that became popular in the 1950s, also known as the "Cool School," has had a unique history. It is regarded with great fondness by many current jazz fans. Reissues of albums by Stan Getz and Chet Baker still sell. But the West Coast genre is rarely an antecedent for today's jazz musicians. The music of the "Cool School" was light, melodic, and airy. Above all, it was pretty. Most jazz today is edgy and exploratory. It is often *not* pretty, although at its best it is beautiful.

Enter Fabian Willmann, born in Germany 65 years after Stan Getz and 6000 miles from Los Angeles. But his subtle, measured aesthetic concept and his mellow, come-hither tenor saxophone tone make you think of breezes on California beaches.

*Balance*, his debut as a leader, on CYH, a new Swiss label, contains six clean, open song forms that set Willmann into graceful motion. He glides and floats and takes his time. On "Royal," he ends up far from where he began. But Willmann is a trustworthy improviser. Even on adventures like "Murmuration," where fresh ideas flow from him as if outside his will, his creative process exhibits clarity and logic. Drummer Jeff Ballard, bassist Arne Huber, and alto saxophonist Asger Nissen (who joins on three tracks) all sound deeply integrated into the album's mood and atmosphere.

The only standard is "No Moon at All." It makes you wish for more. It also proves (in case anyone doubted) that nonchalance can swing. Willmann wanders around in the song and only seems to digress. Everything he plays contains an essence of the familiar melody. Ballard and Huber take cunning little solos.

Willmann and the CYH (for Clap Your Hands) label are off to an intriguing start.
**—Thomas Conrad**

### CHARLES MINGUS
*Charles Mingus Presents Charles Mingus*

Mingus, bass; Eric Dolphy, alto saxophone, bass clarinet; Ted Curson, trumpet; Dannie Richmond, drums

Candid CCD 30052 (CD, available as download, LP). 1961/2022. Nat Hentoff, prod.; Bob D'Orleans, eng.

**PERFORMANCE** ★★★★★
**SONICS** ★★★★½

This release (along with four other titles) relaunches the Candid label, which had a brief, high-profile run in 1960 and 1961. There was a previous attempt to revive the label, in 1989. The prospect of a fully restored Candid is exciting because its back catalog contains people like Cecil Taylor, Booker Little, and Booker Ervin. All five new reissues were remastered by A-list engineer Bernie Grundman.

*Charles Mingus Presents Charles Mingus* is a major document of its time. The pianoless quartet is Mingus plus Eric Dolphy, Ted Curson, and Dannie Richmond. The program is four Mingus originals. On this early version of "Fables of Faubus" (with a different title here for legal reasons), Mingus talk/sings the caustic lyrics that satirize segregationist Arkansas governor Orval Faubus. The burning solos of Dolphy and Curson contain both madcap parody and serious protest.

"Folk Forms, No. 1," with its wild calls and wilder responses, is a modern-day field holler. The epic, 15-minute centerpiece is "What Love." It proves that Dolphy and Curson could play ballads—sprung-loose, sprawling, turbulent ballads—and also that Mingus-plus-Richmond were too volatile an energy center to ever let a ballad settle. The relativity of tempo in a Mingus performance requires players who can function unmoored. Dolphy does much more than function: He was an explosive improviser, one of the most miraculous talents in the history of jazz. Curson, a hardcore, highly creative trumpet player, deserves to be better remembered today.

The mix is odd, with bass and drums in the left channel and horns in the right. But the sound is clear. The new reissue provides no historical perspective on this great album, reprinting only the original liner notes.**—Thomas Conrad**

## CLASSICAL

### SHIVA FESHAREKI, DAPHNE ORAM
*Turning World*

London Contemporary Orchestra, Shiva Feshareki, James Bulley, Kit Downes

NMC Recordings NMC D266 (CD, download). 2022. Jonathan Manners, Ellie Mant, prods., Gilly Chauhan, Andy Garratt, Ross Sanders, engs.

**PERFORMANCE** ★★★★★
**SONICS** ★★★★★

For her first proper full-length, British-born Iranian composer/performer Shiva Feshareki set her ambitions high, reaching up into the ether and backward into the early days of electronic music.

Feshareki has garnered acclaim for her live mixing of electronic and acoustic sounds. On the strength of her live performances and two limited-edition EPs, she was invited to the BBC Proms in 2021, where she employed the BBC Singers, the London Contemporary Orchestra, organ, and electronics to realize a 1950 score by Daphne Oram and premiere a work of her own.

There's a lot in the mix, but Feshareki builds her *Aetherworld* into an organic whole. She mirrors the choir with a recording of an ancient motet, morphing it and spinning it around the soundfield. It must have been aurally stunning in Royal Albert Hall, and it's rich and warm on record, with just enough room sound to give a sense of place. It's abstract, too engrossing to be called "ambient" but never jarring or abrupt. It floats through its own thick haze.

The second half is given to Oram's *Still Point*. Feshareki's interest isn't hard to understand; Oram wrote the piece to reflect her experience working in that same hall as a radio sound engineer when London was bombed during World War II. The score, thought lost until 2016, mixes prerecorded material into the orchestra, adding simple effects such as reverb and altered speed. It was Oram's last symphonic work and was never performed. The orchestration is of its time.

Eight years before cofounding the BBC Radiophonic Workshop, she was already imagining new and altered sound worlds. It's an important piece of history and, from Feshareki, a beautiful tribute.**—Kurt Gottschalk**

## MARI SAMUELSEN
*Lys*

Mari Samuelsen, violin; Scoring Berlin; various soloists and electronics; American Contemporary Music Ensemble.

Deutsche Grammophon 02894862096 (CD, reviewed as 24/96 MQA), 2022. Sundry producers and engineers.

**PERFORMANCE** ★★★★½
**SONICS** ★★★★½

When a long-time audiophile distributor waxes rhapsodic about a recording, I take notice. So, when an unusually starry-eyed Jay Rein of Bluebird Music told me, in the hallways of the MOC at the High End Munich show, that the 52 minutes he'd just spent listening to Mari Samuelson's new recording, *Lys*, was an unforgettable experience and that I shouldn't miss it, I resolved to check it out post-show.

Samuelsen's *Lys* presents one of many distinct trends in modern classical music. Where Nicolas Altstaedt's *Creation* is filled with dissonance, challenges, and a host of new ideas, Samuelsen presents a far more harmonious, pop-meets–New Age, one-idea-suffices approach to classical composition. Fascinated by the way "subtle shifts in light and shade can move us like some great mystical force of nature," Samuelsen assembled a light-filled soundscape from 13 short compositions, many written expressly for the project by women composers, including Carolyn Shaw, Lera Auerbach, and Beyoncé. The outlier is Hildegard von Bingen, whose very different and unquestionably inspired "O vis eternitatis," arranged by Tormod Tvete Vik for solo violin and strings, provides a welcome three-minute, 25-second side trip to an entirely different sound world.

Long lines, luscious strings, lavish arpeggios, and Philip Glass–like repetition are the order of the day. But, instead of Glass's frequently depressive take on things, Samuelsen's composers celebrate the beauty that resides in the natural world and the human heart.

*Lys* is like a long, luxurious bubble bath outdoors in the country on a summer day, beginning in the warm afternoon and continuing by candlelight after sunset. Play it as you watch the sun set on the ocean and dream.**–Jason Victor Serinus**

## MAURICE RAVEL: CONCERTOS POUR PIANO
*Mélodies*

Cédric Tiberghien, piano; Stéphane Degout, baritone; Les Siècles, François-Xavier Roth, cond.

Harmonia Mundi HMM902612 (reviewed as 24/96 WAV), 2022. Jiri Heger, prod. and eng.

**PERFORMANCE** ★★★★½
**SONICS** ★★★★½

The clear-eyed rendition of the Piano Concerto for the Left Hand is the highlight. From the opening low-string figurations, pianist and conductor produce a musical line that's always purposeful, with unfailingly clear textures. Tiberghien, at both *piano* and *forte*, maintains clean, crisp articulations even when subordinate to the bubbling orchestral cauldron. Roth guides listeners firmly through the episodes.

The G Major Concerto is effective, too, though unconventional. Tiberghien takes care to highlight the melodic lines, sometimes overinsistently. The *moto perpetuo* writing in the outer movements works well, and the first movement's second theme expands pleasingly. In the central *Adagio*, the pianist's angular lyricism makes the climaxes anguished rather than ambivalently bittersweet, setting the brief major-key passage in high relief. Tiberghien's subdued, restrained side takes over for a flowing, clear, full-bodied *Pavane*, still with one or two overinsistent points. The final cadence is unexpectedly affirmative.

Harmonia Mundi has mixed in some vocal music among the instrumentals. Stéphane Degout, like most French-trained singers, has a nice immediacy with the text; unlike many of them, he sings strongly and firmly. The *Don Quichotte* songs are authoritative, but the top and the melismas are a bit pressed and effortful; Degout's better in the *Mallarmé* cycle, unrolling long legato lines at heady, medium dynamics. Tiberghien's playing is marvelous: diaphanous and impressionistic in the first song, crystalline in the third.

In the concerti, the ambience makes for splashy climaxes; most of those peaks just get louder rather than filling out, but the final *tutti* in the Left-Hand Concerto is resplendent.**–Stephen Francis Vasta**

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## CLASSICAL

### VARIOUS ARTISTS
*Creation*

Lockenhaus Artists; Nicolas Altstaedt, cello

Alpha861 (24/96 WAV). 2022. Peter Laenger, prod.; Martin Nagorni, Andreas Ruge, balance engs.

**PERFORMANCE** ★★★★★
**SONICS** ★★★★½

Adventurous music lovers know that American and European trends in new music differ and that specific regions and festivals often celebrate unique sound worlds. For some very different flavors than those from Adams, Glass, Heggie, Higdon, Muhly, Riley, and Shaw (amongst many others), this fascinating compendium of pieces composed in celebration of the 40th anniversary of the Lockenhaus Festival, in Austria, will open ears wide.

For *Creation*, cellist Nicolas Altstaedt, who assumed leadership of the festival from violinist Gidon Kremer in 2012, called on composers who had come to Lockenhaus or had works performed there in the past 10 years. The recording contains two premieres: Helena Winkelman's fascinating, must-hear *Atlas: Concerto for Cello and String Orchestra with Timpani*, which is dedicated to Altstaedt, and Raphaël Merlin's *See: Sea & Seeds. Si!* cello concerto. Around them resound a host of short pieces from Matan Porat, Erkki-Sven Tüür, Olli Mustonen, Patkop, Maja S. K. Ratkje, Kurt Schwertsik, Esa-Pekka Salonen, Johannes Julius Fischer (based on the harmonic progression of Tom Waits's "I'm Still Here"), and Lera Auerbach (a classic Old World Jewish melody with a twist).

Winkelman's concerto is worth the price of admission. Her brooding sound world is original and compelling, and the last movement's inexorable force and driving beat, brought home by Fischer's thrilling percussion, may leave you in awe. Ratkje's two minutes are as violent and startling as one might expect, Salonen waxes surprisingly romantic, Mustonen harks back to Bach's cello suites, and Merlin takes his cue from the tensions between ecological catastrophe and the no-longer-mundane lives of classical concert artists. Essential palate-cleansing.—**Jason Victor Serinus**

### SHOSTAKOVICH
*Symphony No.11*

San Diego Symphony Orchestra/Rafael Payare

Platoon PLAT13061 (CD). 2022. Douglas R. Dillon, prod. and eng.

**PERFORMANCE** ★★★★★
**SONICS** ★★★★½

The Eleventh, "The Year 1905," is a program symphony depicting Bloody Sunday, when the Tsar's guards fired on petitioners at the Winter Palace. It's easy for conductors to err by "playing the program"; Rafael Payare instead just plays the music and lets the program fall into place.

The conductor sustains tension through a spacious first movement, with quietly menacing timpani and trumpet interjections over eerie string pedals. The second movement depicts the actual conflict: Some renderings (e.g., Rostropovich) are deliberate, even lumbering, but Payare correctly plays it at scherzo tempo. The string triplets roll along inexorably, above which the arching phrases make powerful sense. Later, the wind chorale has an organlike purity. The *Adagio*'s burnished string threnody yields to low, pungent wind chords, then to a searching violin theme that builds to a full-throated outpouring. Well-sprung rhythms and taut drive animate a conventional Shostakovich finale; the final, echoing chime suggests that the fight isn't over.

The San Diego Symphony tiptoed onto the recording lists in the digital era; its playing here is mostly first-rate. The string tone ranges from warm and deep in the *Adagio*'s threnody to clear and polished in the "scherzo's" waltz duet. The first movement's sustained writing is a bit soft-edged and oozy. Reeds are characterful—note that movement's plaintive flute duet—and the round, pillowy brasses fill out the open, full-bodied *tutti*s nicely.

Winds are "present" and focused in the sonic frame. The strings don't have a comparable spatial depth, but their wide range of timbres and intensities is vividly conveyed. The finale's crisp climactic gong resonates across the soundstage without masking detail. An edgy treble in *tutti* is the only mild flaw. Bravi to all.

—**Stephen Francis Vasta**

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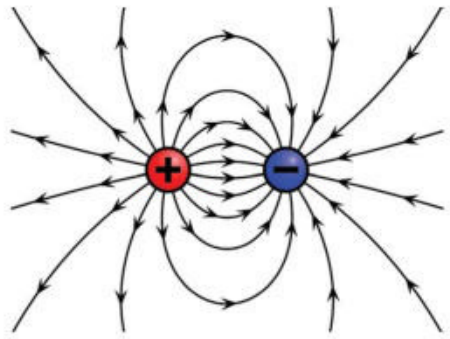

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# RE-TALES BY JULIE MULLINS

**THIS ISSUE:** New record-pressing plants are opening, aiming to meet the high demand for vinyl.

## A pressing matter

Like many fans of music on vinyl, I've grown accustomed to waiting for preordered records. For several years, record-pressing plants have been oversubscribed; there just aren't enough presses to keep up with demand. When vinyl declined in the 1980s—replaced first by cassette tape and then by CD—old presses were abandoned, falling to rust and disrepair before the vinyl revival, leaving the industry with limited capacity. Then a February 2020 fire destroyed the Apollo/Transco factory, one of just two major suppliers of the lacquers used to make most new records. The impact of the lacquer shortage may have been overstated, but it was another factor that companies making records had to deal with.[1]

The long wait for vinyl-pressing capacity appears to be over. In response to huge demand, new vinyl presses are coming online in the US, as new companies are formed and established plants expand.

Tennessee is emerging as a center for vinyl pressing in the US. Memphis Record Pressing was founded in 2014; last year, the company pressed more than 7 million LPs. Since June 2016, MRP has had a strategic partnership with GZ Media in the Czech Republic, reportedly the world's largest record-pressing operation. This arrangement gave MRP access to vinyl stampers, "along with technical and engineering supply to include new vinyl pressing equipment," MRP CEO/co-founder Brandon Seavers wrote, in an emailed response to questions.

MRP is investing $30 million in its pressing plant and packaging operations. The expansion includes construction of a 33,000ft$^2$ building adjacent to its current facility, which will house 36 new presses. MRP expects to double its workforce and run its presses 24/7, yielding capacity of some 125,000 records per day. MRP expects the facility to be operational by late September, a month or so after this magazine hits the streets. The company's packaging operations will also expand, moving into a refurbished, 100,000ft$^2$ warehouse.

MRP isn't Tennessee's only new record-pressing action. GZ Media recently opened a US headquarters in the Music City for its subsidiary company, Nashville Record Pressing. NRP didn't respond to questions, but reports say their LP pressing and packaging operations should be starting up as I write this in early June.

Also in Nashville, United Record Pressing (formerly Southern Plastics), another large supplier, is said to be adding 48 more presses, although *Stereophile* was unable to confirm this.

Finally, Nashville is home to a boutique pressing plant, VinyLab. VinyLab, which handles small vinyl runs starting at 250 copies, is preparing to open B Sides at the VinyLab, a bar/restaurant/music venue adjacent to the plant, with views of the skyline and record presses in action—a trend also seen at Jack White's Third Man Records, in Detroit.

In Denver, Colorado, Vinyl Me Please is taking a similar operations-on-view approach at their forthcoming, 14,000ft$^2$ record-pressing facility, called Vinyl Media Pressing—another VMP. The new plant is under construction and due to open in January. (Up to now, GZ Media pressed most of VMP's releases; a smaller number were pressed at RTI.) VMP, which focuses mainly on audiophile-grade recordings, has hired Gary Salstrom as general manager; Salstrom previously worked at highly regarded Quality Record Pressings, Analogue Productions' facility in Salina, Kansas. Like Analogue Productions, the new VMP is "looking at higher-quality, lower-volume pressing," Salstrom told me by phone. "We're catering to a smaller group of people to be able to guarantee turnaround times."

The building that will house VMP's pressing plant was a winery in the 1920s. Soon it will house not just the pressing plant but also a listening room with a wall of records and several turntable stations where visitors can enjoy music. In front, a retail space will sell records, beverages, and snacks. Another room will house a high-end system, for critical listening. "We want to make it very visitor-friendly," Salstrom said. Views of the pressing and plating areas are part of the plan.

VMP will press mostly from lacquers, but Salstrom can do DMM in a pinch. "In my days at Wakefield Manufacturing, in Phoenix, I was one of the first people in the US trained in DMM plating," he said. "Since most audiophiles don't like the sound produced from DMM cutting, we will probably not see many projects on DMM."

Meanwhile, the new VMP facility may itself do something to address the lacquer shortage. "We'll start with just plating and pressing and are considering mastering lacquers and possibly printing labels and such down the road," he said. "One bite at a time."

In Minneapolis, Minnesota, optical-media manufacturer ADS Group (under its "CopyCats Media Division" name) is building a new, "modern-day" pressing plant with five presses to start; a 65,000ft$^2$ space allows room for expansion.

Another new entrant: Mobile Fidelity Sound Lab (MoFi)—or, rather, Jim Davis, its owner. In answer to a query from *Stereophile*, MoFi VP of Sales and Marketing Jonathan Derda released a statement via email: "Jim Davis, the owner of Mobile Fidelity Sound Lab (MoFi) and Music Direct, will open a new record pressing plant expected to start operating next year." Details forthcoming.

There's a risk that all that capacity will flood the market, which could make records cheaper but could also lead to cost-cutting and, hence, declining quality in an industry that currently is offering perhaps its best quality ever. For the moment, though, everyone's happy, excited about the future. "There's such a shortage of pressing plants that there's enough business for everybody," said Michael Fremer in an interview, echoing widespread sentiment. "The pressure has just been crazy to get stuff done. Everybody's happy, everybody's sharing information. I never expected any of this to happen. It's incredible." ■

1 Wonder why so many recent records seem to be "Direct Metal Mastered"? The DMM process was once pretty rare, and many audiophiles once rejected DMM records, finding them edgy and harsh despite their apparent technical superiority. Yet, today, there seem to be *more* DMM records. Why? Because the DMM process doesn't use lacquers, which are lacquer-coated aluminum discs. Instead, it uses copper plates. Most DMM records we see are cut by GZ Media in the Czech Republic, although Germany's Optimal and Record Industry in the Netherlands also cut DMM. "Lacquer supply continues to be a concern for the industry," MRP's Seavers told *Stereophile*. See Michael Fremer's coverage at tinyurl.com/tkaten4e.

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# MANUFACTURERS' COMMENTS

**THIS ISSUE:** Representatives of JansZen, Gryphon Audio, Genelec, Q Acoustics, and Ideon Audio respond to our reviews of their products.

## JansZen Valentina P8

I thank John Atkinson for his review of the JansZen Valentina P8 compact electrostatic hybrid speaker (Vol.45, No.6). What made this model worth reviewing again after several years' gap was mainly a change from 7" to 8" woofers, which brings a dramatic improvement in bass extension and punch, plus a few other improvements.

Small deviations from our setup recommendations are expected, and indeed may optimize the sound. In this case, however, JA's setup deviated substantially and in a manner that diminished the speakers' performance compared to the inevitable result of following the instructions, which are pretty straightforward: Place the speakers fairly near the front wall (not far away) to attain deep bass and palpable impact; cross their axes at ear level, a bit behind the head position (not ahead of it) to attain correct tonality, precise imaging, and full treble; and turn the side tweeters down low (not up high), so they'll add a hint of air rather than fire nonelectrostatic treble against the sidewalls to compensate the setup. JansZen speakers are designed to be directive, but not excessively so. This makes them more independent of room-surface characteristics than most standard speakers, yet more tolerant of head movement than most electrostatics. This directivity, however, makes correct toe-in important.

I was quite pleased that JA nonetheless liked the sound. This would be because the primary merits still came through, namely the electrostatic transparency, seamless hybrid transition, complete lack of resonant peaks, and true-to-life bass, despite an arrangement that partially suppressed the well-balanced tonality, precise imaging, deep bass, and palpable impact that they normally produce.

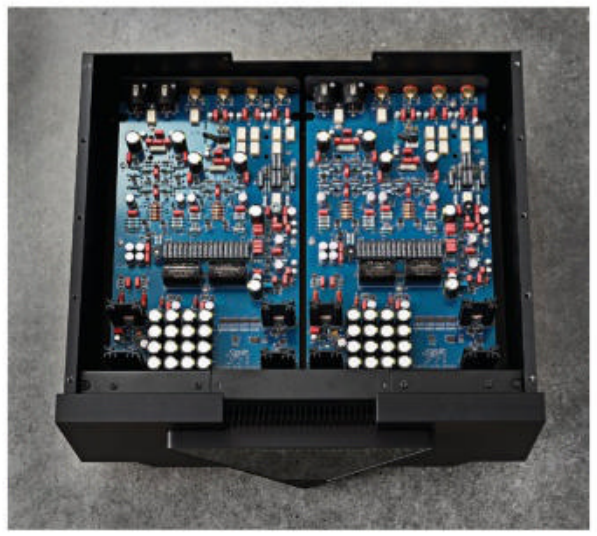
In honor of this review, I've linked our own in-room measurements on our product pages.[1] Prior reviews are referenced under our About Us tab.

*David Janszen, President*
*JansZen Audio*

## Gryphon Audio Commander

All of us at Gryphon Audio Designs want to thank Mikey and *Stereophile* for their glowing review of our Commander preamplifier (Vol.45, No.7). Not surprisingly, Mikey identified all the attributes—aesthetic and functional as well as sonic—which were central to Commander's design. His canny observations regarding Commander's unique lack of noise suggests that Gryphon's obsessive attention to mechanical and electrical isolation of sensitive signal circuitry achieved our desired result: a preamp that, from a musical standpoint, is virtually "not there."

Mikey mentions that our Commander and his darTZeel NHB-468 monoblocks "made especially beautiful music together," and in fact, Commander has been engineered to extract ultimate performance from *all* of the world's best amplifiers, including darTZeel's magnificent 468s. More compelling still is the pairing of Commander with our statement power amplifier: Apex. It is our intention that Mikey hear this magical pairing in the



near future and our sincere desire that serious students of the audio art have the opportunity to hear all of the qualities Mikey found so special.

*Anthony Chiarella, Director, Sales and Marketing*
*Gryphon Audio North America*

## Genelec G Three

Thank you for undergoing a complete and thorough discussion of the G Three. Herb's questions and commentary are appreciated, as they serve as an example of how to form a complete picture of our products.

*William Eggleston*
*Genelec Inc. (USA)*

## Q Acoustics Concept 50

Thank you for providing such an intelligent and interesting review of the Q Acoustics Concept 50 speakers. We may be a relatively young brand, but we have always had some very experienced speaker people behind it who appreciate the work that goes into a thorough review.

Minimizing cabinet vibration and coloration is a core design aim for us, which we believe differentiates us from most of our peers. This isolating-base technology allows a calculated amount of movement within the loudspeaker base. On the Concept 50, this can be locked if you wish to use your own isolation base. It was interesting to read of your experience with our room-positioning adjustments, and we're glad that our driver configuration didn't encourage you to slouch in your seat, though we do suggest a second speaker-sitting cat to ensure identical left and right channel performance.

**We may be a relatively young brand, but we have always had some very experienced speaker people behind it who appreciate the work that goes into a thorough review.**

To read that "this immaculate-looking, -sounding, and -measuring loudspeaker gets a strong recommendation" and that "the Q Acoustics Concept 50's measured performance is indicative of excellent audio engineering" will make our team very happy indeed.

*Alex Munro, Brand Director*
*Q Acoustics*

## Ideon Audio Ayazi DAC/ 3R Master Time Black Star Clock

On behalf of the Ideon Audio team, I would like to thank Alex Halberstadt for his time and effort reviewing our Ayazi DAC/Master Time combo.

The idea behind the Ayazi DAC was to offer a serious, no-compromise device in a price category that music lovers and music collectors like us could afford. So, we sacrificed unnecessary bells and whistles and focused on engineering hi-end sound on what we would accept as an affordable reference device. We like to believe it worked! Both those devices, as well as the new IΩN DAC and our flagship Absolute series, feature proprietary designs based on innovative engineering, years of R&D, and extensive experience in the software and digital-components domains. Thanks again for this detailed, spot-on review.

*George Ligerakis, CEO*
*Ideon Audio*

1 See janszenaudio.com/pages/specs-valentina-p8.

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# MY BACK PAGES

BY JIM ANDERSON

**THIS ISSUE:** A Grammy Award–winning recording engineer on real-world recording and dealing with musicians.

## Why do you need all those microphones?

"Why do you need all of those microphones?"

I've been asked this question more than once, by musicians you may have heard of. I'm not going to name names, but if you press me I might. Let's see where this goes.

It's a reasonable question, sometimes. Still.

I've had serious conservatory musical training, but I wouldn't call myself a musician—not anymore. At one time, I would have. Now, I would say that I'm a recording engineer and music producer. So, why would a musician with no technical training or professional technical experience consider themselves a proficient, competent recording engineer? Why would a musician question my technical decisions?

A friend of mine, Zoë Thrall, once said, when addressing the audience at the opening ceremony of the Audio Engineering Society convention, "Just because you can press the Red Button doesn't mean that you're a recording engineer." Zoë has pressed the Red Button for many albums and can rightfully call herself a recording engineer, by training and experience.[1]

I've sometimes found myself surrounded in the studio by musicians who, collectively, have been involved in hundreds of recordings, yet somehow the process of *making* a recording has eluded them. That can be a good and a bad thing. Good in that it encourages them to stay out of the engineer's way, and bad in that all the experience they've accrued hasn't taught them how to work toward the best possible result in the studio. I've seen many bands talk themselves out of a great mix because they thought they knew better. Then they wondered why they were disappointed with the final result.

There will always be bands that want to record with all the musicians in the same room, with no headphones for hearing each other. This is a fine idea, and classical musicians do it all the time, but the method has limitations, and in other (nonclassical) genres, there are compromises. When recording, everyone in the band will have to play in balance with the rest of the ensemble—everyone, including the drummer!

If you go back and listen to some of the recordings from the early days of stereo, you can hear the drummer "tipping"—playing relatively lightly during the session, only playing out when necessary. Another problem is that sometimes little fixes must be made: a wrong note in the bassline or an early entrance by a sideman. If everyone is playing in the same room, these fixes, which musicians have gotten accustomed to making, are quite difficult to do.

The only alternative is to use booths or go-bo's (go-betweens, or baffles) for separation and isolation and have the musicians listen to each other through headphones.

I once had a saxophonist ask me, before he'd even said "Hello": "What microphone are you using for me today?" Before I'd given it a moment's thought, I heard myself answer, "What mouthpiece are you using today?" Fortunately for me, the sax player took my hint, realized what a useless question he'd asked, and relented. He was a sideman, not the leader of the date, so he wasn't involved in technical decisions about the recording.

**I've seen many bands talk themselves out of a great mix because they thought they knew better.**

A wonderful, older pianist with whom I had a long relationship (see, I haven't named a name, yet, but I have left some clues) asked me if we could set up with the bass player off to his left (which makes sense, since bass players sometimes like to see what the pianist's left hand is doing) and the drummer behind him (similar to how the trio would set up on stage). I was to inform the drummer and the bassist that the headphone system was down and wouldn't be repaired in time for our use. Why? Because the leader wanted the musicians to listen to each other—to hear each other naturally—as they would in a live show. I happily complied with this request, knowing from experience that the setup would result in a perfectly balanced group that would be relatively easy to record.

This pianist was a veteran of many sessions, both good and less good, so he knew his plan would succeed. And it did! However, the drummer, who was the main reason the pianist wanted to work this way, spent a fair amount of time grumbling "Why do we have to record in a studio where things don't work?"

Before recording at the Village Vanguard one evening, Paul Motian—okay, so I dropped a name—asked me why I had to use all of those microphones on the drums when they hadn't used nearly that many when recording the Bill Evans Trio at the same venue years before.

I motioned toward Geri Allen's piano and asked, "Did Bill Evans have a monitor speaker mounted on the piano to hear you and Scott?"

"No," Paul replied.

"Did Scott LaFaro play with an amplifier?" I asked, pointing to Charlie Haden's bass amp.

"No," Paul replied again.

"Did you use such a large drum kit, have a monitor speaker, and was a PA used in the Vanguard, back then?"

"No," replied Paul, yet again.

"Well, that's why I need all of these microphones, for you, and Geri, and Charlie. It's to counteract all of these differences in performance since then." I knew that, when it came to mixing *Live at the Village Vanguard* for Japan's DIW label,[2] all three of them, Allen, Haden, and Motian, would each have a different perspective on how the recording should sound. If I didn't have all those aural perspectives, provided by all those well-placed microphones, I wouldn't be able to shape the sound they were all expecting.

That's why I need all of those microphones. ■

1 Thrall is an engineer and music-studio manager who started out at the Power Station and is now at the Hideout in Las Vegas.

2 See bit.ly/3LNuBeY. Volume 2—titled *Unissued Tracks*—is just out on the Somethin' Cool label. It's available on all the major streaming services. The original album is much harder to find.

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